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BIBLIOGRAPHY
OF
NORTH AMERICAN GEOLOGY
FOR
1918

WITH SUBJECT INDEX

BY

JOHN M. NICKLES

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BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY FOR 1918, WITH SUBJECT INDEX.

By JOHN M. NICKLES.

INTRODUCTION.

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the year 1918 follows the plan and arrangement of its immediate predecessors. It includes publications bearing on the geology of the Continent of North America and adjoining islands; also Panama and the Hawaiian Islands. Papers by American writers on the geology of other parts of the world are not included. Textbooks and papers general in character by American authors are included; those by foreign authors are excluded unless they appear in American publications.

As heretofore, the papers, with full title and medium of publication and explanatory note when the title is not fully self-explanatory, are listed under the authors, arranged in alphabetic order. The author list is followed by an index to the literature listed. In this index the entries in one alphabet are of three kinds—first, subject, with various subdivisions, to enable the specialist to ascertain readily all the papers bearing on a particular subject or area; second, titles of papers, many of them abbreviated or inverted, under their leading words; and third, cross references, which have been freely used to avoid too much repetition. The subjects have been printed in black-faced type, the titles of papers and cross references in ordinary type. As it may not be always obvious which subject headings have been adopted, an outline of those used immediately precedes the index.

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Reproduced with some additions from the Centennial Number, 1818—1918 (July, 1918), of the American Journal of Science. The contributions that relate to geology have been entered under the individual authors.

OUTLINE OF SUBJECT HEADINGS.

In the following index the subject headings are printed in black-faced type. An outline of these is here given that it may be quickly seen which subject heading of two or more synonyms has been adopted. Thus "petroleum" and not "oil" nor "rock oil" has been chosen. That the specialist may see at a glance under what headings to find cognate literature, subject headings that are more or less closely related have been grouped together under the following heads: Areal or regional, general, economic, dynamic and structural, physiographic, stratigraphic or historical, paleontology, petrology, mineralogy, underground water. In the index the specific entries under the areal or regional subject headings are alphabeted under these same heads arranged in the same order, namely, general, economic, etc.

AREAL OR REGIONAL.

The States and Territories of the Union, Alabama, Alaska, etc.; The Provinces of Canada, Alberta, etc.; Greenland; Arctic regions; Mexico; the countries of Central America; the West Indies, and the single islands; the Hawaiian Islands.

GENERAL.

Associations, meetings; Addresses; Philosophy; History; Biography; Bibliography; Education; Textbooks.

Surveys; Fieldwork; Excursions; Technique; Cartography.

Classification; Nomenclature.

Geochemistry; Chemical analyses (list); Geophysics; Atmosphere; Radioactivity.

Experimental investigations; Borings; Miscellaneous.

ECONOMIC.

Ore deposits, origin; Contact phenomena.

Gold; Placers; Black sands; Silver; Quicksilver; Nickel; Cobalt; Copper; Lead; Zinc; Iron; Magnetite; Manganese; Tin.

Aluminum; Bauxite; Antimony; Bismuth; Tungsten; Vanadium; Uranium; Carnotite ores; Molybdenum; Chromic iron ore.

Platinum; Palladium; Titanium; Rutile; Rare earths; Monazite; Zircon.

Coal; Anthracite; Lignite; Peat.

Petroleum; Natural gas; Oil shales; Asphalt; Albertite; Gilsonite; Bituminous rock.

Stone; Building stone; Granite; Trap; Bluestone; Limestone; Marble; Lime; Gypsum.

Sand; Glass sand; Silica; Quartz; Quartzite; Sandstone; Gravel; Cement and cement materials; Concrete materials; Road materials.

Clay; Kaolin; Bentonite; Fire Clay; Ganister; Slate; Shale; Pyrophyllite.

Serpentine; Asbestos; Steatite; Soapstone; Talc.

Precious stones; Diamonds; Sapphires; Turquoise; Tourmaline; Onyx.

Abrasive materials; Corundum; Emery; Garnet; Diatomaceous earth; Tripoli; Volcanic ash; Pumice; Millstones; Whetstones; Novaculite; Feldspar.

Phosphate; Apatite; Potash; Alunite; Nitrate; Glauconite; Marl.
Salt; Salines; Bromine; Calcium chloride; Borax; Fluorspar.
Barite; Strontium; Mineral paints.
Arsenic; Fuller's earth; Infusorial earth; Magnesite; Mica; Graphite.
Phosphorus; Sulphur; Pyrite.
Soils.

DYNAMIC AND STRUCTURAL.

Earth, genesis of; Earth, age of; Earth, interior of; Earth, temperature of.
Volcanism; Volcanoes; Earthquakes; Seismology; Seismographs; Mud volcanoes.
Isostasy; Orogeny; Changes of level.
Magmas; Magmatic differentiation; Laccoliths; Intrusions; Dikes; Contact phenomena.
Deformation; Folding; Faulting; Unconformities.
Conglomerates; Concretions; Stalactites; Jointing; Cleavage.
Denudation; Erosion; Coast changes; Coral islands and reefs; Weathering; Caves; Sink holes; Wind work; Dunes; Loess; Landslides.
Glaciers; Glacial erosion; Glacial striæ; Potholes; Kettle holes.
Sedimentation; Eskers; Kames; Moraines.
Drainage changes.

PHYSIOGRAPHIC.

Geomorphy; Relief maps.
Plains; Prairies; Peneplains; Valleys; Cirques; Deserts; Alluvial fans; Deltas; Mounds, natural; Sink holes; Karsts; Natural bridges.
Rivers; Stream piracy; Meanders; Falls; Lakes; Swamps; Marshes; Everglades.
Terraces; Beaches; Shore lines.

STRATIGRAPHIC OR HISTORICAL.

Geologic history; Geologic time; Paleogeography; Paleogeographic maps; Paleoclimatology.
Geologic maps; Geologic formations described (list); Tables of formations; Unconformities; Borings.
Pre-Cambrian; Paleozoic (undifferentiated); Cambrian; Ordovician; Silurian; Devonian; Carboniferous; Mesozoic (undifferentiated); Triassic; Jurassic; Cretaceous; Tertiary; Quaternary; Recent.
Glacial geology; Glaciation; Drift deposits; Glacial lakes; Erratic boulders; Ice ages (ancient).

PALEONTOLOGY.

Geographic distribution; Evolution; Restorations.
Vertebrata; Man, fossil; Mammalia; Aves; Reptilia; Amphibia; Pisces; Footprints.
Invertebrata; Arthropoda; Crustacea; Trilobita; Ostracoda; Insecta; Arachnida; Myriapoda.
Mollusca; Cephalopoda; Gastropoda; Pelecypoda.
Molluscoidea; Brachiopoda; Bryozoa; Vermes.
Echinodermata; Echinoidea; Asteroidea; Crinoidea; Cystoidea.
Coelenterata; Anthozoa; Hydrozoa; Graptolites.
Protozoa; Spongida; Foraminifera.
Paleobotany; Diatoms; Algæ.
Problematica.

PETROLOGY.

Rocks, origin; Rocks, structural features; Rocks described (list); Igneous and volcanic rocks; Rock-forming minerals; Lava; Oolite; Dolomite; Pebbles.

MINERALOGY.

Minerals described (list); Crystallography; Pseudomorphism; Paragenesis of minerals; Rock-forming minerals; Meteorites.

UNDERGROUND WATER.

Mineral waters; Thermal waters; Geysers; Springs; Mine waters.

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Clarksburg red shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Clayton limestone, Tertiary, Alabama: Hager, 387.
Clear Creek bed, Carboniferous, Texas: Drake, 266.
Clear Creek formation, Devonian, Missouri: Branson, 102.
Clear Creek sandstone, Pennsylvanian, Missouri: Greene, 363.
Clem Creek sandstone, Carboniferous, Oklahoma: Emery, 287.
Cliff Lake granite porphyry, pre-Cambrian, Manitoba: Bruce, 113.
Clinch sandstone, Silurian, Virginia: Hinds, 439.
Clinton formation, Silurian, Maryland: Clark *et al.*, 179.
Clinton formation, Silurian, Pennsylvania: Butts, 142.
"Clinton group," Silurian, New York: Chadwick, 158.

Clore formation, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Cloverly formation, Cretaceous, Montana: Hancock, 395.
Cloverly formation, Cretaceous, Wyoming: Bowen, 88; Moody and Taliaferro, 688; Wegemann, 1010.
Cobalt series, pre-Cambrian, Ontario: Burrows, 132.
Cobalt series, pre-Cambrian, Quebec: Wilson, 1058.
Cochahee sandstone, Pennsylvanian, Oklahoma: Winchester, *et al.*, 1067.
Cockeysville marble, Cambro-Ordovician, Maryland: Clark *et al.*, 179.
Cockfield formation, Tertiary, Gulf coast: Matteson, 634.
Coconino sandstone, Carboniferous, Arizona: Schuchert 828.
Cody shale, Cretaceous, Wyoming: Moody and Taliaferro, 688.
Coffeyville limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Coleman bed, Carboniferous, Texas: Drake, 266.
Coleman Junction bed, Carboniferous, Texas: Drake, 266.
Collingsworth gypsum member, Permian, Oklahoma: Aurin, 27.
Colorado formation, Cretaceous, Montana: Pardee, 738.
Colorado shale, Cretaceous, Montana: Bowen, 92; Hancock, 395; Stebinger, 915.
Columbia group, Quaternary, Maryland: Clark *et al.*, 179; Little, 577.
Columbia lava, Tertiary, Oregon: Smith, 884.
Comanche series, Cretaceous, Texas and Oklahoma: Stephenson, 909.
Comanchean system: Moore and Haynes, 697.
Comanche Creek bed, Carboniferous, Texas: Drake, 266.
Comanche Peak limestone, Cretaceous, Texas: Drake, 266.
Conasauga formation, Cambrian, Georgia: Shearer, 858.
Concord formation, Oligocene, California: Clark, 172.
Conemaugh formation, Pennsylvanian, Maryland: Clark *et al.*, 179.
Conemaugh series, Pennsylvanian, West Virginia: Reger and Teets, 778.
Connellsville sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Connellsville (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Connoquenessing (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Connoquenessing (Upper) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Conococheague limestone, Cambrian, Maryland: Clark *et al.*, 179.
Cook Mountain formation, Tertiary, Texas: Matteson, 634.
Coon Mountain bed, Carboniferous, Texas: Drake, 266.
Cooper limestone, Devonian, Missouri: Branson, 102.
Corral Hollow shales, Mesozoic, California: Davis, 230.
Cotton limestone, Carboniferous, Oklahoma: Bowen, 91; Cullen, 213.
Cottonwood limestone member, Permian, Kansas: Moore and Haynes, 697.
Cottonwood Creek bed, Carboniferous, Texas: Drake, 266.
Council Grove formation, Permian, Kansas: Moore and Haynes, 697.
Covada group, Carboniferous(?), Washington: Pardee, 741.
Craghead Creek shale, Devonian, Missouri: Branson, 102.
Crouse limestone, Carboniferous, Oklahoma: Bowen, 91; Cullen, 213.
Cypress sandstone, Mississippian, Illinois and Kentucky: Ulrich, 962.
Cypress sandstone, Mississippian, Missouri: Branson, 102.
Cypress ("Big Clifty") sandstone, Mississippian, Kentucky and Illinois: Butts, 140.
Cypress Hills beds, Oligocene, Saskatchewan: Davis, 233.
Cyrene limestone, Silurian, Missouri: Branson, 102.
Dakota formation, Cretaceous, Utah: Dake, 219.
Dakota sandstone, Cretaceous, Colorado, New Mexico: Lee, 554.
Dakota sandstone, Cretaceous, Colorado: Ziegler, 1091.
Dakota sandstone, Cretaceous, Kansas: Moore and Haynes, 697; Perrine, 751.
Dakota sandstone, Cretaceous, South Dakota: Darton, 228.
Dakota sandstone, Cretaceous, Utah: Emery, 288.
Darby formation, Devonian, Wyoming: Blackwelder, 76.
Davis member, Cambrian, Missouri: Branson, 102; Tarr, 932.
Day Creek dolomite member, Permian, Kansas: Moore and Haynes, 697.
Deadwood formation, Cambrian, South Dakota: Darton, 228.
Decaturville chert, Devonian, Tennessee: Dunbar, 273.
Decew member of Lockport, Silurian, New York: Chadwick, 158.
Decota sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Deep Spring formation, pre-Cambrian, California: Kirk, 519.
Deer Creek limestone, Carboniferous, Oklahoma: Bowen, 90; Heald and Mather, 425.
Deer Creek limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.

Deerwood iron-bearing member, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Denison formation, Cretaceous, Texas: Stephenson, 909.
Denton clay member, Cretaceous, Texas: Stephenson, 909.
Del Rio clay, Cretaceous, Texas: Roberts, 794.
De Queen limestone member, Cretaceous, Arkansas: Miser and Purdue, 679, 680.
Derby formation, Cambrian, Missouri: Tarr, 932.
Derby member, Cambrian, Missouri: Branson, 102.
Des Moines group, Pennsylvanian, Kansas: Moore and Haynes, 697.
Des Moines group, Pennsylvanian, Missouri: Branson, 102.
Devils Den limestone, Carboniferous, Texas: Böse, 85.
Devils Island sandstone, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Devil's River limestone, Cretaceous, Texas: Roberts, 794.
Dewey limestone, Carboniferous, Oklahoma: Cullen, 213; Lloyd and Mather, 579.
Dewey limestone, Pennsylvanian, Oklahoma: Greene, 363.
Dewitt formation, Tertiary, Texas: Matteson, 634.
Diamond Peak quartzite, Pennsylvanian: Kirk, 519.
Dierks limestone lentil, Cretaceous, Arkansas: Miser and Purdue, 679, 680.
Dimple formation, Pennsylvanian, Texas: Baker and Bowman, 32.
Dinwoody formation, Permian or lower Triassic, Wyoming: Blackwelder, 76.
Dinwoody formation, Triassic, Wyoming: Condit, 202.
Doerun member, Cambrian, Missouri: Branson, 102.
Dog Creek dolomite member, Permian, Oklahoma: Aurin, 27.
Dog Creek shale member, Permian, Kansas: Moore and Haynes, 697.
Dog Creek shale member, Permian, Oklahoma: Aurin, 27.
Dolores formation, Triassic, Utah: Dake, 219.
Donnelly iron ore, Silurian, New York: Chadwick, 158.
Dorwin sandstone member, Carboniferous, Wyoming: Blackwelder, 76.
Dotham series, Jurassic, Oregon: Davis, 230.
Double Mountain stage, Permian, Texas: Beede and Waite, 59.
Douglas formation, Pennsylvanian, Kansas: Moore and Haynes, 697.
Douglas formation, Pennsylvanian, Missouri: Branson, 102.
Doyle shale member, Permian, Kansas: Moore and Haynes, 697.
Drum limestone, Pennsylvanian, Missouri: McCourt, 606; Wilson, 1057.
Drum limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Duck Creek formation, Cretaceous, Texas: Stephenson, 909.
Duluth gabbro, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Duncan series, pre-Carboniferous, British Columbia: Bancroft, 38.
Dunkard formation, Permian, Maryland: Clark *et al.*, 179.
Dunvegan formation, Cretaceous, Alberta: McLearn, 610.
Eagle limestone and shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Eagle sandstone, Cretaceous, Montana: Bowen, 92; Hancock, 395.
Eagle (?) sandstone, Cretaceous, Montana: Collier, 200.
Eagle Creek formation, Eocene, Washington and Oregon: Chaney, 166.
Eagle Ford clay, Cretaceous, Texas and Oklahoma: Stephenson, 909.
Eagle Ford formation, Cretaceous, Texas: Roberts, 794.
East Lynn sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Ector tongue, Cretaceous, Texas: Stephenson, 909.
Edgewood formation, Silurian, Missouri: Branson, 102.
Edmonton formation, Cretaceous, Alberta: Allan, 12.
Eileen sandstone, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Elbrook limestone, Cambrian, Maryland: Clark *et al.*, 179.
Elgin sandstone, Pennsylvanian, Kansas: Moore and Haynes, 697.
Elgin sandstone, Pennsylvanian, Oklahoma: Greene, 363.
Elk conglomerates, Cretaceous, British Columbia: Rose, 806.
Elk Lick limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Ellenburger formation, pre-Carboniferous, Texas: Kempher, 504.
Elliott Creek bed, Carboniferous, Texas: Drake, 266.
Ellis formation, Jurassic, Montana: Collier, 200; Condit, 202; Pardee, 738; Stebinger, 915.
Elm Creek bed, Carboniferous, Texas: Drake, 266.
Elm Creek limestone, Carboniferous, Texas: Böse, 85.
Elmdale shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Elvins formation, Cambrian, Missouri: Branson, 102; Tarr, 932.
Eminence chert, Cambrian, Missouri: Tarr, 932.
Eminence formation, Ozarkian, Missouri: Branson, 102.
Emporia limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Englewood limestone, Carboniferous, South Dakota: Darton, 228.

Enid formation, Permian, Kansas: Moore and Haynes, 697.
Enid formation, Permian, Oklahoma: Aurin, 27.
Enterprise shale member, Permian, Kansas: Moore and Haynes, 697.
Erwin quartzite, Cambrian, Virginia: Hewett *et al.*, 433.
Escamela limestones, Cretaceous, Mexico: Dumble, 271.
Eskridge shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Estevan beds, Eocene, Saskatchewan: Davis, 233.
Etchegoin formation, Miocene, California: English, 294.
Eutaw sand, Cretaceous, Alabama: Hager, 387.
Evanston formation (?), Cretaceous, Wyoming: Schultz, 833.
Fabre series, pre-Cambrian, Quebec: Wilson, 1058.
Ferguson gypsum member, Permian, Oklahoma: Aurin, 27.
Fern Glen formation, Mississippian, Missouri: Branson, 102.
Fernie formation, Jurassic, British Columbia: Rose, 806.
Fernvale formation, Ordovician, Missouri: Branson, 102.
Ferris formation, Tertiary (?) Wyoming: Bowen, 88.
Fiborn limestone, Silurian, Michigan: Savage and Crooks, 818.
Fitzgerald limestones, Silurian, Northwest Territory: Cameron, 146.
Flat Gap member, Devonian, Tennessee: Dunbar, 273.
Flathead beds, Cretaceous, British Columbia: Rose, 806.
Flathead quartzite, Cambrian, Montana: Blackwelder, 76; Pardee, 738.
Flathead quartzite, Cambrian, Wyoming: Schultz, 833.
Flaxville gravel, Miocene or Pliocene, Montana: Collier and Thom, 201.
Flaxville gravel, Tertiary, Montana: Collier, 200.
Fleming clay, Tertiary, Gulf coast: Matteson, 634.
Florence flint member, Permian, Kansas: Moore and Haynes, 697.
Flowerpot shale member, Permian, Kansas: Moore and Haynes, 697.
Foraker limestone, Carboniferous, Oklahoma: Bowen, 91; Cullen, 213; Heald, 423.
Forest Hill sand, Tertiary, Mississippi: Cooke, 205.
Fort Hays limestone member, Cretaceous, Kansas: Moore and Haynes, 697.
Fort Payne ("Tullahoma") chert, Mississippian, Kentucky and Illinois: Butts, 140.
Fort Riley limestone, Oklahoma: Cullen, 213.
Fort Riley limestone member, Permian, Kansas: Moore and Haynes, 697.
Fort Scott formation, Pennsylvanian, Kansas and Oklahoma: Berger, 64.
Fort Scott limestone, Pennsylvanian, Missouri: McCourt, 606.
Fort Scott limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Fort Union formation, Eocene, North Dakota: Quirke, 772.
Fort Union formation, Eocene (?) North Dakota: Collier, 199.
Fort Union formation, Eocene, Saskatchewan: Davis, 233.
Fort Union formation, Eocene, Wyoming: Wegemann, 1010.
Fort Union formation, Tertiary, Montana: Collier, 200.
Fort Worth limestone, Cretaceous, Texas: Shuler, 864; Stephenson, 909.
Fourmile sandstone, Pennsylvanian, Oklahoma: Bowen, 89.
Fox Ford bed, Carboniferous, Texas: Drake, 266.
Fox Hills formation, Cretaceous, Saskatchewan: Davis, 233.
Franciscan formation, Jurassic (?), California: English, 294.
Franciscan group, Mesozoic, California: Davis, 230, 232.
Franklin limestone, pre-Cambrian, Pennsylvania: Jonas, 485.
Franks conglomerate, Oklahoma: Cullen, 213.
Freda sandstone, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Fredericksburg group, Cretaceous, Texas and Oklahoma: Stephenson, 909.
Fredericksburg limestone, Cretaceous, Texas: Drake, 266.
Fredonia oolite member, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Freeport (Lower) limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Freeport (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Freeport (Upper) limestone, Penunsylvanian, West Virginia: Reger and Teets, 778.
Freeport (Upper) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Frontier formation, Cretaceous, Wyoming: Bowen, 88; Moody and Taliaferro, 688.
Frontier formation, Cretaceous, Wyoming and Idaho: Schultz, 833.
Fulton green shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Furnaceville iron ore, Silurian, New York: Chadwick, 158.
Fuson shale, Cretaceous, South Dakota: Darton, 228.
Galena dolomite, Ordovician, Wisconsin: Alden, 8.

Galesburg shale, Pennsylvanian, Missouri: McCourt, 606; Wilson, 1057.
Galesburg shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Galice series, Jurassic, Oregon: Davis, 230.
Gallatin limestone, Cambrian, Wyoming and Idaho: Schultz, 833.
Gallatin limestone, Cambrian, Wyoming and Montana: Blackwelder, 76.
Gaptank formation, Pennsylvanian, Texas: Udden, 959.
Garibaldi volcanic formation, Pleistocene, British Columbia: Burwash, 135.
Garrison limestone and shale member, Permian, Kansas: Moore and Haynes, 697.
Gasconade formation, Ordovician, Missouri: Tarr, 932.
Gasconade formation, Ozarkian, Missouri: Branson, 102.
Gasper oolite, Mississippian, Kentucky: Butts, 140; Ulrich, 962.
Gates limestone, Silurian, New York: Chadwick, 158.
Gatesburg formation, Ozarkian, Pennsylvania: Butts, 142.
Genesee member, Devonian, Maryland: Clark *et al.*, 179.
Genesee shale, Devonian, New York: Grabau, 355.
Giants Range granite, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Gilbert (Upper) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Gilboy sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Gilliam formation, Permian, Texas: Udden, 959.
Girardeau limestone, Silurian, Missouri: Branson, 102.
Gladeville sandstone, Pennsylvanian, Virginia: Hinds, 439.
Glen Dean limestone, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 952.
Glendon limestone member, Tertiary, Alabama and Mississippi: Cooke, 205.
Glen Park limestone, Mississippian, Missouri: Branson, 102.
Glenrose beds, Cretaceous, Texas: Böse, 85.
Golconda formation, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Golconda shale, Mississippian, Illinois and Kentucky: Ulrich, 962.
Goodland limestone, Cretaceous, Texas and Oklahoma: Stephenson, 909.
Goodland limestone, Oklahoma: Cullen, 213.
Gosport greensand, Tertiary, Alabama: Hager, 387.
Grafton sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Grand Falls chert, Mississippian, Oklahoma: Perry, 752.
Grand Gulf formation, Tertiary, Alabama: Hager, 387.
Grand Tower limestone, Devonian, Missouri: Branson, 102.
Graneros shale, Cretaceous, Colorado: Ziegler, 1091.
Graneros shale, Cretaceous, South Dakota: Darton, 228.
Graneros shale member, Cretaceous, Kansas: Moore and Haynes, 697.
Grape Creek bed, Carboniferous, Texas: Drake, 266.
Grape Creek formation, Permian, Texas: Beede and Waite, 59.
Grassy Creek shale, Mississippian, Missouri: Branson, 102.
Gravina series, Triassic, Alaska: Chapin, 167.
Grayhorse limestone, Carboniferous, Oklahoma: Bowen, 91.
Grayson marl member, Cretaceous, Texas: Stephenson, 909.
Great Smoky formation, Georgia: Shearer and Hull, 859.
Greenbrier formation, Mississippian, Maryland: Clark *et al.*, 179.
Greenbrier limestone, Mississippian, West Virginia: Reger and Teets, 778.
Greenhorn limestone, Cretaceous, Colorado: Ziegler, 1091.
Greenhorn limestone, Cretaceous, South Dakota: Darton, 228.
Greenhorn limestone member, Cretaceous, Kansas: Moore and Haynes, 697.
Green River formation, Tertiary, Colorado: Ziegler, 1091.
Green River formation, Tertiary, Utah: Winchester, 1066.
Greer formation, Permian, Kansas: Moore and Haynes, 697.
Greer formation, Permian, Oklahoma: Aurin, 27.
Grimsby (Medina) sandstone, Silurian, New York: Chadwick, 158.
Grizzly Bear formation, Cretaceous, Alberta: Allan, 12; Slipper, 871.
Gros Ventre formation, Cambrian, Wyoming: Blackwelder, 76; Schultz, 833.
Gulf series, Cretaceous, Texas and Oklahoma: Stephenson, 909.
Guyandot sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Hackberry shale member, Permian, Kansas: Moore and Haynes, 697.
Hamilton formation, Devonian, Pennsylvania: Butts, 142.
Hamilton member, Devonian, Maryland: Clark *et al.*, 179.
Hampshire formation, Devonian, Maryland: Clark *et al.*, 179.
Hampton shale, Cambrian, Virginia: Hewett *et al.*, 433.
Hanna formation, Tertiary, Wyoming: Bowen, 88.
Hanna Valley bed, Carboniferous, Texas: Drake, 266.
Hannibal shales, Mississippian, Missouri: Branson, 102.

Hardin sandstone member, Devonian, Tennessee: Dunbar, 273.
Hardinsburg sandstone, Mississippian, Illinois and Kentucky: Butts, 140; Ulrich, 962.
Harper sandstone member, Permian, Kansas: Moore and Haynes, 697.
Harpers formation, Cambrian, Maryland: Clark *et al.*, 179.
Harrell shale, Devonian, Pennsylvania: Butts, 142.
Harriman novaculite, Devonian, Tennessee: Dunbar, 273.
Hartridge black shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Harvey conglomerate, Pennsylvanian, West Virginia: Reger and Teets, 778.
Hasmark formation, Cambrian, Montana: Pardee, 738.
Hatchitigbee formation, Tertiary, Alabama: Hager, 387.
Haymond formation, Pennsylvanian, Texas: Baker and Bowman, 32.
Hay River limestones, Devonian, Northwest Territory: Cameron, 146.
Hay River shales, Devonian, Northwest Territory: Cameron, 146.
Haystack gypsum member, Permian, Oklahoma: Aurin, 27.
Helderberg formation, Devonian, Maryland: Clark *et al.*, 179.
Helderberg limestone, Devonian, Pennsylvania: Butts, 142.
Hendricks dolomite, Silurian, Michigan: Savage and Crooks, 818.
Henrietta formation, Pennsylvanian, Missouri: Branson, 102; McCourt, 606; Wilson, 1057.
Henshaw formation, Pennsylvanian, Kentucky: Lee, 552.
Herkimer sandstone, Silurian, New York: Chadwick, 158.
Herrington, limestone, Oklahoma: Cullen, 213.
Herrington limestone member, Permian, Kansas: Moore and Haynes, 697.
Hertha limestone, Pennsylvanian, Missouri: McCourt, 606; Wilson, 1057.
Hertha limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Hess formation, Permian, Texas: Udden, 959.
Hilliard formation (?), Cretaceous, Wyoming: Schultz, 833.
Hog Creek bed, Carboniferous, Texas: Drake, 266.
Hogshooter limestone, Carboniferous, Oklahoma: Cullen, 213; Lloyd and Mather, 579; Ross, 91.
Holston marble, Ordovician, Tennessee: Stose and Schrader, 923.
Holtsclaw sandstone, Mississippian, Kentucky and Indiana: Butts, 140.
Home Creek bed, Carboniferous, Texas: Drake, 266.
Homewood sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Hordes Creek bed, Carboniferous, Texas: Drake, 266.
Horse Creek bed, Carboniferous, Texas: Drake, 266.
Horse Creek clays and shales, Carboniferous, Texas: Drake, 266.
Horsethief sandstone, Cretaceous, Montana: Stebinger, 915.
Howard limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Iatan limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Illinoian drift, Pleistocene, Wisconsin: Alden, 8.
Indian Creek bed, Carboniferous, Texas: Drake, 266.
Ingleside chert, Mesozoic, California: Davis, 230.
Iola limestone, Pennsylvanian, Missouri: McCourt, 606; Wilson, 1057.
Iola limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Iowan drift, Pleistocene, Wisconsin: Alden, 8.
Irondequoit limestone, Sulurian, New York: Chadwick, 158.
Jacalitos formation, Miocene, California: English, 294.
Jackson formation, Tertiary, Alabama and Mississippi: Cooke, 205.
Jackson formation, Tertiary, Gulf coast: Matteson, 634.
Jagger Bend bed, Carboniferous, Texas: Drake, 266.
Jane Lew sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Jefferson limestone, Devonian, Montana: Pardee, 738.
Jefferson limestone, Devonian, Wyoming: Schultz, 833.
Jefferson City formation, Ordovician, Missouri: Branson, 102; Tarr, 932.
Jenkins shale member, Permian, Kansas: Moore and Haynes, 697.
Jennings formation, Devonian, Maryland: Clark *et al.*, 179.
Joachim formation, Ordovician, Missouri: Branson, 102.
Johnstown cement limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Judith River formation, Cretaceous, Montana: Bowen, 92; Collier, 200; Hancock, 395.
Juniata formation, Ordovician, Maryland: Clark *et al.*, 179.
Juniata formation, Silurian, Pennsylvania: Butts, 142.
Kaibab limestone, Carboniferous, Arizona: Schuchert, 828.
Kaminis granite, pre-Cambrian, Manitoba: Bruce, 113.
Kaminis granite, pre-Cambrian, Saskatchewan: Bruce, 111.
Kanawha black flint, Pennsylvanian, West Virginia: Reger and Teets, 778.

Kanawha group, Pennsylvanian, West Virginia: Reger and Teets, 778.
Kansas City formation, Pennsylvanian, Kansas: Moore and Haynes, 697.
Kansas City formation, Pennsylvanian, Missouri: Branson, 102; McCourt, 606; Wilson, 1057.
Kanwaka shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Kaslo volcanics, Carboniferous, British Columbia: Bancroft, 38.
Keepalloo iron formation, pre-Cambrian, Belcher Islands, Canada: Moore, 693.
Kenwood sandstone, Mississippian, Kentucky and Indiana: Butts, 140.
Keokuk limestone, Mississippian, Missouri: Branson, 102.
Keokuk limestone, Mississippian, Missouri and Iowa: Van Tuyl, 972.
Ketchikan series, Carboniferous and Triassic, Alaska: Chapin, 167.
Kiamichi clay, Cretaceous, Texas: Stephenson, 909.
Kiamichi formation, Oklahoma: Cullen, 213.
Kimmswick limestone, Ordovician, Missouri: Branson, 102.
Kintla formation, pre-Cambrian, British Columbia: Rose, 806.
Kiowa shale, Comanchean, Kansas: Moore and Haynes, 697; Perrine, 751.
Kiowa shales, Cretaceous, Kansas: Twenhofel, 956.
Kirker tuffs, Oligocene, California: Clark, 172.
Kirkland formation, Silurian, Pennsylvania and Maryland: Ulrich, 963.
Kirkland iron ore, Silurian, New York: Chadwick, 158.
Kirkland Lake series, pre-Cambrian, Quebec: Wilson, 1058.
Kiser gypsum member, Permian, Oklahoma: Aurin, 27.
Kishenena formation, Tertiary, British Columbia: Rose, 806.
Kisseynew gneiss, pre-Cambrian, Saskatchewan: Bruce, 111.
Kisseynew group, pre-Cambrian, Manitoba: Bruce, 113.
Kitanning (Lower) fire clay, Pennsylvanian, West Virginia: Reger and Teets, 778.
Kitanning (Upper) fire clay, Pennsylvanian, West Virginia: Reger and Teets, 778.
Klutina group, Carboniferous or pre-Carboniferous, Alaska: Chapin, 168.
Knife Lake slate, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Knight formation, Tertiary, Wyoming and Idaho: Schultz, 833.
Knox dolomite, Cambro-Ordovician, Georgia: Shearer, 858.
Knox dolomite, Ordovician, Tennessee: Stose and Schrader, 923.
Kootenai formation, Cretaceous, Montana: Bowen, 92; Condit, 202; Hancock, 395; Pardee, 738; Stebinger, 915.
Kootenai (?) formation, Cretaceous, Montana: Collier, 200.
Kootenay formation, Cretaceous, British Columbia: Rose, 806.
Kreyenhagen shale, Oligocene, California: Clark, 172.
Labadie limestone, Carboniferous, Oklahoma: Bowen, 90; Clark, 174.
Labadie limestone, Pennsylvanian, Oklahoma: Winchester *et al.*, 1067.
Labette shale, Pennsylvanian, Missouri: McCourt, 606.
Labette shale, Pennsylvanian, Oklahoma: Greene, 363.
Labette shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
La Cruz marl, Tertiary, West Indies: Vaughan, 979.
Ladore shale, Pennsylvanian, Missouri: McCourt, 606; Wilson, 1057.
Ladore shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
"Lafayette" formation, Mississippi Valley: Shaw, 850.
Lafayette formation, Tertiary, Alabama: Hager, 387.
Lafayette gravel, Tertiary, Alabama: Shaw, 855.
Lakeport limestones, Silurian, New York: Chadwick, 158.
Lake Superior sandstone, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Lakota sandstone, Cretaceous, South Dakota: Darton, 228.
Lamotte sandstone, Cambrian, Missouri: Branson, 102.
Lance formation, Eocene, North Dakota: Collier, 199.
Lance formation, Tertiary (?), Montana: Bowen, 92; Collier, 200; Hancock, 395.
Lance formation, Tertiary (?), Wyoming: Wegemann, 1010.
Lane shale, Pennsylvanian, Missouri: McCourt, 606.
Lane shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Lansing formation, Pennsylvanian, Kansas: Moore and Haynes, 697.
Lansing formation, Pennsylvanian, Missouri: Branson, 102; McCourt, 606.
La Plata group, Jurassic, Utah: Emery, 288.
La Plata sandstone, Jurassic, Utah: Dake, 219.
"Laramie" formation, Cretaceous, Colorado, New Mexico: Lee, 554.
Lardeau diabase schists, post-Carboniferous (?), British Columbia: Bancroft, 38.
Larder Lake series, pre-Cambrian, Quebec: Wilson, 1058.
Larke dolomite, Ozarkian, Pennsylvania: Butts, 142.

Las Cahobes beds, Tertiary, Haiti: Jones, 490.
Lawrence shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Lea Park formation, Cretaceous, Alberta: Allan, 12; Slipper, 871.
Lecompton limestone, Carboniferous, Oklahoma: Bowen, 90; Clark, 174; Heald and Mather, 425.
Lecompton limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Lee formation, Pennsylvanian, Virginia: Hinds, 439.
Leigh dolomite member, Ordovician, Wyoming: Blackwelder, 76.
Lemont limestone member, Ordovician, Pennsylvania: Butts, 142.
Lenapah limestone, Oklahoma: Cullen, 213.
Lennep sandstone, Cretaceous, Montana: Hancock, 395.
Lenoir limestone, Ordovician, Tennessee: Stose and Schrader, 923.
Leonard formation, Permian, Texas: Udden, 959.
Lewis shale, Cretaceous, Colorado, New Mexico: Lee, 554.
Lewis shale, Cretaceous, Wyoming: Bowen, 88; Wegemann, 1010.
Lincolnville chert, Mississippian, Oklahoma: Perry, 752.
Linden or Helderbergian group, Devonian, Tennessee: Dunbar, 273.
Lisbon formation, Tertiary, Alabama: Hager, 387.
Lissie gravel, Tertiary, Alabama: Shaw, 855.
Lissie gravel or Lafayette, Tertiary, Gulf coast: Matteson, 634.
Little Hominy limestone, Carboniferous, Oklahoma: Heald and Mather, 425.
Lohn bed, Carboniferous, Texas: Drake, 266.
Loon River formation, Cretaceous, Alberta: McLearn, 610.
Loon River shales, Cretaceous, Northwest Territory: Cameron, 146.
Lost City limestone, Pennsylvanian, Oklahoma: Greene, 363.
Lost Creek bed, Carboniferous, Texas: Drake, 266.
Loudon formation, Cambrian, Maryland: Clark *et al.*, 179.
Louisiana limestone, Mississippian, Missouri: Branson, 102.
Lowville limestone, Ordovician, Pennsylvania: Butts, 142.
Loxley terrace deposits, Mississippi Valley: Shaw, 850.
Lucero beds, Cretaceous, Cuba: DeGolyer, 241.
Lueders formation, Permian, Texas: Beede and Waite, 59.
Luta limestone member, Permian, Kansas: Moore and Haynes, 697.
Luyano marls, Cretaceous, Cuba: De Golyer, 241.
Lynch Creek bed, Carboniferous, Texas: Drake, 266.
McAdam formation, Silurian, Nova Scotia: McLearn, 611.
McBean formation, Eocene, Georgia: Cooke and Shearer, 206.
McCarthy shale, Triassic, Alaska: Moffit, 683.
McElmo formation, Cretaceous (?), Utah: Emery, 288.
McElmo formation, Jurassic, Utah: Dake, 219.
McKenzie formation, Silurian, Maryland: Clark *et al.*, 179.
McKenzie limestone, Silurian, Pennsylvania: Butts, 142.
McLeansboro formation, Pennsylvanian, Kentucky: Lee, 552.
Madison limestone, Carboniferous, Montana: Collier, 200; Pardee, 738.
Madison limestone, Carboniferous, Wyoming, Blackwelder, 76.
Madison limestone, Carboniferous, Wyoming and Idaho: Schultz, 833.
Madison limestone, Mississippian, Montana: Stebinger, 915.
Madison sandstone, Cambrian, Wisconsin: Alden, 8.
Magnesian (Lower), limestone, Ordovician, Wisconsin: Alden, 8.
Magothy formation, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Mahoning sandstone stage, Pennsylvanian, West Virginia: Reger and Teets, 778.
Main Street limestone member, Cretaceous, Texas: Stephenson, 909.
Maissade beds, Tertiary, Haiti: Jones, 490.
Mancos shale, Cretaceous, Colorado, New Mexico: Lee, 554.
Mancos shale, Cretaceous, Utah: Emery, 288.
Mangum dolomite member, Permian, Oklahoma: Aurin, 27.
Manitoulin shale, Silurian, New York: Chadwick, 158.
Maltrata limestone, Cretaceous, Mexico: Dumble, 271.
Maplewood shale, Silurian, New York: Chadwick, 158.
Maquoketa shale, Ordovician, Missouri: Bronson, 102.
Maquoketa shale, Ordovician, Wisconsin: Alden, 8.
Marathon series, Ordovician, Texas: Baker and Bowman, 32.
Maravillas formation, Ordovician, Texas: Baker and Bowman, 32.
Marble Falls formation, Mississippian, Texas: Kempher, 504.
Marble Falls limestone, Mississippian, Texas: Hager, 388.
Marcellus member, Devonian, Maryland: Clark *et al.*, 179.
Marcellus shale, Devonian, Pennsylvania: Butts, 142.
Marianna formation, Oligocene, Florida: Sellards and Gunter, 842.

Marianna limestone, Tertiary, Alabama and Mississippi: Cooke, 205.
Marin sandstone, Mesozoic, California: Davis, 230.
Marion formation, Permian, Kansas: Moore and Haynes, 697; Perrine, 751.
Markley formation, Oligocene, California: Clark, 172.
Marmaton formation, Pennsylvanian, Kansas: Moore and Haynes, 697.
Marseilles drift, Quaternary, Illinois: Cady, 143.
Marshall Lake series, pre-Cambrian, Ontario: Hopkins, 455.
Martinsburg formation, Ordovician, Maryland: Clark *et al.*, 179.
Martville sandstone, Silurian, New York: Chadwick, 158.
Matawan formation, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Matfield shale member, Permian, Kansas: Moore and Haynes, 697.
Mauch Chunk formation, Mississippian, Maryland: Clark *et al.*, 179.
Mauch Chunk series, Mississippian, West Virginia: Reger and Teets, 778.
Mauch Chunk shale, Mississippian, Pennsylvania: Butts, 142.
Mayville beds, Silurian, Wisconsin: Alden, 8.
Maywood formation, Silurian (?), Montana: Pardee, 738.
Medicine Bow formation, Cretaceous, Wyoming: Bowen, 88.
Medicine Lodge gypsum member, Permian, Kansas: Moore and Haynes, 697.
Medicine Lodge gypsum member, Permian, Oklahoma: Aurin, 27.
Meganos group, Eocene, California: Clark, 171.
Menard limestone, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Mendez formation, Cretaceous and Tertiary, Mexico: Dumble, 271.
Mendota limestone, Cambrian, Wisconsin: Alden, 8.
Menteth limestone, Devonian, New York: Grabau, 355.
Mentor beds, Comanchean, Kansas: Perrine, 751.
Mentor beds, Cretaceous, Kansas: Twenhofel, 956.
Meramec group, Mississippian, Kentucky and Illinois: Butts, 140.
Mesaverde formation, Cretaceous, Colorado, New Mexico: Lee, 554.
Mesaverde formation, Cretaceous, Wyoming, Bowen, 88; Moody and Taliaferro, 688; Wegemann, 1010.
Meson beds, Tertiary, Mexico: Dumble, 271.
Midway formation, Tertiary, Gulf coast: Matteson, 634.
Midway group, Tertiary, Alabama: Hager, 387.
Milford granite gneiss, pre-Carboniferous, Rhode Island: Hawkins, 412.
Milwaukee formation, Devonian, Wisconsin: Alden, 8.
Mines dolomite, Ozarkian, Pennsylvania: Butts, 142.
Minnekahta limestone, Carboniferous, South Dakota: Darton, 228.
Minnelusa sandstone, Carboniferous, South Dakota: Darton, 228.
Minnewaste limestone, Cretaceous, South Dakota: Darton, 228.
Mint Spring calcareous marl member, Alabama and Mississippi: Cooke, 205.
Missi (Lower) formation, pre-Cambrian, Manitoba: Bruce, 113.
Missi (Lower) series, pre-Cambrian, Saskatchewan: Bruce, 111.
Missi (Upper) formation, pre-Cambrian, Manitoba: Bruce, 113.
Missi (Upper) series, pre-Cambrian, Saskatchewan: Bruce, 111.
Missouri group, Pennsylvanian, Kansas: Moore and Haynes, 697.
Missouri group, Pennsylvanian, Missouri: Branson, 102.
Moenkopi formation, Triassic, Utah: Emery, 288.
Monitor sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Monmouth formation, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Monongahela formation (Elkgarden), Pennsylvanian, Maryland: Clark *et al.*, 179.
Monongahela series, Pennsylvanian, West Virginia: Reger and Teets, 778.
Monte Sana group, Mississippian, Illinois and Kentucky: Ulrich, 962.
Monterey group, California: Davis, 232.
Moodys calcareous marl member, Alabama and Mississippi: Cooke, 205.
Morgantown sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Morrison formation, Cretaceous (?), Colorado, New Mexico: Lee, 554.
Morrison formation, Cretaceous, Wyoming: Bowen, 88.
Morrison formation, Cretaceous (?), Wyoming: Wegemann, 1010.
Morrison formation, Jurassic (?), Great Plains: Schuchert, 830.
Morrison formation, Rocky Mountain region: Mook, 691.
Morrison (?) formation, Cretaceous (?), Montana: Hancock, 395.
Morrison shale, Cretaceous (?), South Dakota: Darton, 228.
Morse Creek limestone, Devonian, New York: Grabau, 355.
Moscow shale, Devonian, New York: Grabau, 355.
Mt. Marion beds, Devonian, New York: Grabau, 355.
Mt. Selman formation, Tertiary, Gulf coast: Matteson, 634.
Mowry shale, Cretaceous, Montana: Collier, 200.
Mowry shale, Cretaceous, Wyoming: Bowen, 88; Moody and Taliaferro, 688.

Mowry shale member, Cretaceous, Wyoming: Wegemann, 1010.
Moydart formation, Silurian, Nova Scotia: McLearn, 611.
Muav limestone, Cambrian, Arizona: Schuchert, 829.
Myrtle formation, Cretaceous, Oregon: Smith, 884.
Myrtle Creek formation, Cretaceous, Alberta: Allan, 12.
Naheola formation, Tertiary, Alabama: Hager, 387.
Nanjemoy formation, Tertiary, Maryland: Clark *et al.*, 179; Little, 577.
Naknek formation, Jurassic, Alaska: Chapin, 168.
Nanafalia formation, Tertiary, Alabama: Hager, 387.
Navajo sandstone, Jurassic, Utah: Emery, 288.
Navarro formation, Cretaceous, Texas: Stephenson, 909.
Nelson granite, Jurassic, British Columbia: Bancroft, 38.
Neva limestone, Carboniferous, Oklahoma: Bowen, 91; Cullen, 213.
Neva limestone, Permian, Kansas: Perrine, 751.
Neva limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Newark formation, Triassic, Maryland: Clark *et al.*, 179.
New Providence shale, Mississippian, Kentucky and Indiana: Butts, 140.
New Richmond sandstone, Ordovician, Illinois: Cady, 143.
New River group, Pennsylvanian, West Virginia: Reger and Teets, 778.
Newton limestone and shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Niagara dolomite, Silurian, Wisconsin: Alden, 8.
Nikomeki sand and silt, Pleistocene, British Columbia: Burwash, 135.
Niobrara formation, Cretaceous, Colorado: Ziegler, 1091.
Niobrara formation, Cretaceous, Kansas: Moore and Haynes, 697.
Niobrara formation, Cretaceous, Colorado, New Mexico: Lee, 554.
Niobrara formation, Cretaceous, South Dakota: Darton, 228.
Niobrara formation, Cretaceous, Wyoming: Bowen, 88; Wegemann, 1010.
Nittany dolomite, Canadian, Pennsylvania: Butts, 142.
Noix oolite, Silurian, Missouri: Branson, 102.
Nonesuch shale, pre-Cambrian, Minnesota: Harder and Johnston, 403.
North Park formation, Tertiary, Wyoming: Bowen, 88.
Northview formation, Mississippian, Missouri: Branson, 102.
Norton formation, Pennsylvanian, Virginia: Hinds, 439.
Nugget sandstone, Jurassic, Wyoming and Idaho: Schultz, 833.
Nuttall sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Nuttall (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Oakridge sandstone, Mesozoic, California: Davis, 230.
Ocala formation, Eocene, Florida: Sellards and Gunter, 842.
Ocala limestone, Eocene, Georgia: Cooke and Shearer, 206.
Ocala limestone, Tertiary, Alabama and Mississippi: Cooke, 205.
Ocoee group, Georgia: Shearer and Hull, 859.
Ogalalla formation, Tertiary, Kansas: Moore and Haynes, 697.
Ogishke conglomerate, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Ohara limestone member, Mississippian, Kentucky: Butts, 140; Ulrich, 962.
Okaw formation, Mississippian, Missouri: Branson, 102.
Okaw limestone, Mississippian, Illinois: Ulrich, 962.
Okay limestone, Carboniferous, Oklahoma: Heald and Mather, 425.
Okesa sandstone, Carboniferous, Oklahoma: Clark, 174; Hopkins, 454.
Olive Hill formation, Devonian, Tennessee: Dunbar, 273.
Oneota formation, Ordovician, Illinois: Cady, 143.
Onondaga formation, Devonian, Pennsylvania: Butts, 142.
Opeche formation, Carboniferous, South Dakota: Darton, 228.
Oread limestone, Carboniferous, Oklahoma: Bowen, 90; Clark, 174; Cullen, 213.
Oread limestone, Pennsylvanian, Oklahoma: Heald, 424.
Oread limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Ore Hill limestone member, Ozarkian, Pennsylvania: Butts, 142.
Orienta sandstone, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Oriskany formation, Devonian, Maryland: Clark *et al.*, 179.
Oriskany group, Devonian, Tennessee: Dunbar, 273.
Orizaba limestone, Cretaceous, Mexico: Dumble, 271.
Orlando limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Oronto group, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Osage group, Mississippian, Kentucky, Indiana, and Illinois: Butts 140.
Oswego sandstone, Silurian, Pennsylvania: Butts, 142.
Ottosee shale, Ordovician, Tennessee: Stose and Schrader, 923.
Otsquago sandstone, Silurian, New York: Chadwick, 158.

Outer conglomerate, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Owenyo limestone, Permian: Kirk, 519.
Ozuluama series, Tertiary, Mexico: Dumble, 271.
Pahasapa limestone, Carboniferous, South Dakota: Darton, 228.
Paint Creek formation, Mississippian, Illinois: Ulrich, 962.
Paint Rock bed, Carboniferous, Texas: Drake, 266.
Paintrock formation, Permian, Texas: Beede and Waite, 59.
Pakan formation, Cretaceous, Alberta: Allan, 12.
Palestine sandstone, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Paluxy sands, Cretaceous, Texas: Drake, 266.
Pamunkey group, Tertiary, Maryland: Clark *et al.*, 179.
Papagallos shales, Cretaceous, Mexico: Dumble, 271.
Park City formation, Carboniferous, Utah and Wyoming: Blackwelder, 76.
Park City formation, Carboniferous, Wyoming: Condit, 202.
Park City formation, Pennsylvanian and Permian, Utah: Schultz, 834.
Parkman sandstone member, Cretaceous, Wyoming: Wegemann, 1010.
Parks Mountain bed, Carboniferous, Texas: Drake, 266.
Paso Robles formation, Pliocene, California: English, 294.
Paspotansa member, Tertiary, Maryland: Little, 577.
Patapsco formation, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Patuxent formation, Cretaceous, Maryland: Clarke *et al.*, 179; Little, 577.
Pawhuska limestone, Pennsylvanian, Oklahoma: Heald, 424.
Pawnee limestone, Oklahoma: Cullen, 213.
Pawnee limestone, Pennsylvanian, Missouri: McCourt, 606.
Pawnee limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Pawpaw sandy member, Cretaceous, Texas: Stephenson, 909.
Peace River formation, Cretaceous, Alberta: McLearn, 610.
Peachbottom slate, Ordovician (?), Maryland: Clark *et al.*, 179.
Pearl shale member, Permian, Kansas: Moore and Haynes, 697.
Pecan Gap chalk member, Cretaceous, Texas: Stephenson, 909.
Pegram limestone, Devonian, Tennessee: Dunbar, 273.
Pennington shale, Mississippian, Virginia: Hinds, 439.
Phoenix or Schroeppel shale, Silurian, New York: Chadwick, 158.
Phosphoria formation, Carboniferous, Wyoming and Idaho Schultz, 833.
Phosphoria formation, Carboniferous and Triassic (?), Montana: Condit, 202.
Pierre formation, Cretaceous, Saskatchewan: Davis, 233.
Pierre shale, Cretaceous, Alberta: Slipper, 871.
Pierre shale, Cretaceous, Colorado: Ziegler, 1091.
Pierre shale, Cretaceous, Kansas: Moore and Haynes, 697.
Pierre shale, Cretaceous, Colorado, New Mexico: Lee, 554.
Pierre shale, Cretaceous, North Dakota: Collier, 199.
Pierre shale, Cretaceous, South Dakota: Darton, 228.
Pierson limestone, Mississippian, Missouri: Branson, 102.
Pike gravel member, Cretaceous, Arkansas: Miser and Purdue, 679, 680.
Pine Creek limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Pine Point limestone, Devonian, Northwest Territory: Cameron, 146.
Pine Ridge sandstone, Devonian, Pennsylvania: Butts, 142.
Piscataway member, Tertiary, Maryland: Little, 577.
Pitkin limestone, Oklahoma: Cullen, 213.
Pittsburgh (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Pittsburgh red shale, Pennsylvanian, West Virginia: Reger and Teets, 778.
Platteville-Galena dolomite, Ordovician, Illinois: Cady, 143.
Plattin formation, Ordovician, Missouri: Branson, 102.
Plattsburg limestone, Pennsylvanian, Missouri: McCourt, 606.
Plattsburg limestone member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Pleasant Hill limestone, Cambrian, Pennsylvania: Butts, 142.
Pleasanton formation, Pennsylvania, Missouri: Branson, 102; McCourt, 606.
Pleasanton shale, Pennsylvanian, Missouri: Wilson, 1057.
Pleasanton shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Plum Creek bed, Mississippian, Illinois and Kentucky: Ulrich, 962.
Plummer limestone, Carboniferous, Oklahoma: Bowen, 90; Clark, 174.
Pocono formation, Mississippian, Maryland: Clark *et al.*, 179.
Pocono formation, Mississippian, Pennsylvania: Butts, 142.
Pocono sandstone series, Mississippian, West Virginia: Reger and Teets, 778.
Poison Canyon formation, Eocene, Colorado, New Mexico: Lee, 554.
Pokegama quartzite, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Pontiac series, pre-Cambrian, Quebec: Wilson, 1058.
Portage member, Devonian, Maryland: Clark *et al.*, 179.

Potapaco member, Tertiary, Maryland: Little, 577.
Potomac group, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Potosi formation, Cambrian, Missouri: Tarr, 932.
Potosi formation, Ozarkian, Missouri: Branson, 102.
Pottsville formation, Carboniferous, Illinois: Cady, 143.
Pottsville formation, Mississippian, Pennsylvania: Butts, 142.
Pottsville formation, Pennsylvanian, Maryland: Clark *et al.*, 179.
Pottsville group, Pennsylvanian, Kentucky: Butts, 140; Lee, 552.
Pottsville series, Pennsylvanian, West Virginia: Reger and Teets, 778.
Prairie du Chien group, Ordovician, Illinois: Cady, 143.
Presquile dolomites, Devonian, Northwest Territory: Cameron, 146.
Proctor formation, Cambrian, Missouri: Tarr, 932.
Proctor formation, Ozarkian, Missouri: Branson, 102.
Puckwunge conglomerate, pre-Cambrian, Minnesota: Harder and Johnston, 403.
Puget series, Eocene, British Columbia: Burwash, 135.
Purgatoire formation, Cretaceous, Colorado, New Mexico: Lee, 554.
Puyallup erosion-interval, Pleistocene, British Columbia: Burwash, 135.
Pyburn limestone, Devonian, Tennessee: Dunbar, 273.
Quadrant formation, Carboniferous, Montana: Pardee, 738.
Quadrant quartzite, Carboniferous, Montana: Condit, 202.
Quakertown black slate, Pennsylvanian, West Virginia: Reger and Teets, 778.
Quall limestone, Devonian, Tennessee: Dunbar, 273.
Quartermaster formation, Permian, Oklahoma: Aurin, 27.
Racine beds, Silurian, Wisconsin: Alden, 8.
Raleigh (Upper) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Rancocas formation, Cretaceous, Maryland: Clark *et al.*, 179.
Raritan formation, Cretaceous, Maryland: Clark *et al.*, 179; Little, 577.
Raton formation, Eocene, Colorado, New Mexico: Lee, 554.
Ravenscrag beds, Eocene, Saskatchewan: Davis, 233.
Raytown limestone, Pennsylvanian, Missouri: McCourt, 606.
Red Eagle limestone, Carboniferous, Oklahoma: Bowen, 91; Cullen, 213.
Red Bluff clay, Tertiary, Alabama and Mississippi: Cooke, 205.
Red Lion formation, Cambrian, Montana: Pardee, 738.
Redstone limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Redwall limestone, Carboniferous, Arizona: Schuchert, 828.
Reed dolomite, pre-Cambrian, California: Kirk, 519.
Reedsville shale, Ordovician, Pennsylvania: Butts, 142.
Renault formation, Mississippian, Illinois: Ulrich, 962.
Revard sandstone, Carboniferous, Oklahoma: Clark, 174.
Revard sandstone, Pennsylvanian, Oklahoma: Winchester *et al.*, 1067.
Reward conglomerate, Pennsylvanian: Kirk, 519.
Reynales limestone, Silurian, New York: Chadwick, 158.
Ribstone Creek formation, Cretaceous, Alberta: Slipper, 871.
Ricker bed, Carboniferous, Texas: Drake, 266.
Ridenhower shale, Mississippian, Kentucky and Illinois: Butts, 140; Ulrich, 962.
Ridgely sandstone, Devonian, Pennsylvania: Butts, 142.
Ripley formation, Cretaceous, Alabama: Hager, 387.
Rochelle conglomerate, Carboniferous, Texas: Drake, 266.
Rochester shale, Silurian, New York: Chadwick, 158.
Rock Creek limestone, Pennsylvanian, Oklahoma: Greene, 363.
Rockhill limestone, Carboniferous, Texas: Böse, 85.
Rockhouse shale, Devonian, Tennessee: Dunbar, 273.
Rockmart slate, Ordovician, Georgia: Shearer, 858.
Rockvale sandstone member, Cretaceous, Colorado, New Mexico: Lee, 554.
"Rockwood formation," Silurian, Virginia: Hinds, 439.
Rodman limestone, Ordovician, Pennsylvania: Butts, 142.
Rome formation, Cambrian, Georgia: Shearer, 858.
Romney formation, Devonian, Maryland: Clark *et al.*, 179.
Rosewood shale, Mississippian, Kentucky and Indiana: Butts, 140.
Rosiclare sandstone member, Mississippian, Kentucky: Butts, 140; Ulrich, 962.
Ross limestone member, Devonian, Tennessee: Dunbar, 273.
Ross Brook formation, Silurian, Nova Scotia: McLearn, 611.
Roubidoux formation, Ordovician, Missouri: Branson, 102; Tarr, 932.
Rough Creek bed, Carboniferous, Texas: Drake, 266.
Ruma formation, Mississippian, Illinois: Ulrich, 962.
Saddle Creek bed, Carboniferous, Texas: Drake, 266.

St. Bartholomew limestone, Tertiary, St. Bartholomew (West Indies): Vaughan, 979.
St. Clair marble, Oklahoma: Cullen, 213.
St. John formation, Cretaceous, Alberta: McLea., 610.
St. Lawrence (?) formation, Cambrian, Wisconsin: Alden, 8.
St. Louis limestone, Mississippian, Kentucky and Indiana: Butts, 140.
St. Louis limestone, Mississippian, Missouri: Branson, 102.
St. Louis limestone, Mississippian, Missouri and Iowa: Van Tuyl, 972.
St. Mary formation, Eocene (?), Montana: Stebinger, 915.
St. Mary's formation, Tertiary, Maryland: Clark *et al.*, 179; Little, 577.
St. Maurice formation, Tertiary, Louisiana: Matteson, 634.
St. Peter sandstone, Ordovician, Illinois: Cady, 143.
St. Peter sandstone, Ordovician, Missouri: Branson, 102.
St. Peter sandstone, Ordovician, Wisconsin: Alden, 8.
St. Stephens limestone, Tertiary, Alabama: Hager, 387.
Ste. Genevieve limestone, Mississippian, Missouri: Branson, 102.
Ste. Genevieve limestone, Mississippian, Kentucky and Indiana: Butts, 140.
Ste. Genevieve limestone, Mississippian, Illinois and Kentucky, Ulrich, 962.
Salem limestone, Mississippian, Missouri: Branson, 102.
Salinas shale, Miocene, California: English, 294.
Salt Plain shale member, Permian, Kansas: Moore and Haynes, 697.
Saltsburg sandstone, Pennsylvanian, West Virginia, Reger and Teets, 778.
Salt Wash sandstone member, Cretaceous, Utah: Emery, 288.
Sample sandstone, Mississippian, Kentucky: Ulrich, 962.
Sample sandstone member, Mississippian, Kentucky: Butts, 140.
San Angelo formation, Permian, Texas: Beede and Waite, 59.
San Felipe formation, Cretaceous, Mexico: Dumble, 271.
San Juan limestones, Cretaceous, Mexico: Dumble, 271.
San Lorenzo formation, Oligocene, California: Clark and Arnold, 173.
San Lorenzo series, Oligocene, California: Clark, 172.
San Luis formation, Mesozoic, California: Davis, 230.
San Rafael, Tertiary, Mexico: Dumble, 271.
San Ramon formation, Oligocene, California: Clark, 172.
San Sebastian shale, Tertiary, Porto Rico: Semmes, 845.
Santa Anna bed, Carboniferous, Texas: Drake, 266.
Santa Anna Branch bed, Carboniferous, Texas: Drake, 266.
Santa Margarita formation, Miocene, California: English, 294.
Sardis terrace deposits, Mississippi Valley: Shaw, 850.
Satsop formation, Pleistocene, Oregon: Smith, 884.
Sauquoit beds, Silurian, New York: Chadwick, 158.
Sausalito chert, Mesozoic, California: Davis, 230.
Saxton conglomerate member, Devonian, Pennsylvania: Butts, 142.
Schroeppel shale, Silurian, New York: Chadwick, 158.
Scranton shale member, Pennsylvanian, Kansas; Moore and Haynes, 697.
Selma chalk, Cretaceous, Alabama: Hager, 387.
Setters quartzite, Cambrian (?) Maryland: Clark *et al.*, 179.
Severy shale member, Pennsylvanian, Kansas: Moore and Haynes, 697.
Sevier shale, Ordovician Tennessee: Stose and Schrader, 923.
Sewickley limestone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Sewickley (Lower) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Sewickley (Upper) sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Sexton Creek limestone, Silurian, Missouri: Branson, 102.
Shadrick Mill sandstone, Carboniferous, Texas: Drake, 266.
Shady dolomite, Cambrian, Virginia: Hewett *et al.*, 433.
Shakopee dolomite, Ordovician, Illinois: Cady, 143.
Shandro shales, Cretaceous, Alberta: Allan, 12.
Sharon sandstone, Pennsylvanian, West Virginia: Reger and Teets, 778.
Shasta series, Cretaceous, California: English, 294.
Shawnee formation, Pennsylvanian, Kansas: Moore and Haynes, 697.
Shawnee formation, Pennsylvanian, Missouri: Branson, 102.
Shenandoah limestone, Cambro-Ordovician, Maryland: Clark *et al.*, 179.
Shimer gypsum member, Permian, Kansas: Moore and Haynes, 697.
Shimer gypsum member, Permian, Oklahoma: Aurin, 27.
Shinarump conglomerate, Triassic, Utah: Emery, 288.
Short Creek oolite, Mississippian, Oklahoma: Perry, 752.
Shriver limestone, Devonian, Pennsylvania: Butts, 142.
Silver Hill formation Cambrian, Montana: Pardee, 738.

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