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BIBLIOGRAPHY

OF

NORTH AMERICAN GEOLOGY

FOR

1913

WITH SUBJECT INDEX

BY

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BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY FOR 1913, WITH SUBJECT INDEX.

By John M. Nickles.

INTRODUCTION.

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the year 1913 follows the plan and arrangement of its immediate predecessors, the bibliographies for 1906–7, 1908, 1909, 1910, 1911, and 1912 (Bulletins 372, 409, 444, 495, 524, and 545 of the U. S. Geological Survey). 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, a classified scheme of those used immediately precedes the index.

Miss Isabel P. Evans has given efficient assistance in the work.

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1202. Mineral resources of the United States, Calendar year, 1912; Part I, Metals, 1079 pp., 3 pls., 13 figs.; Part II, Nonmetals, 1218 pp., 8 pls., 11 figs., 1913.

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1204. The Sangamon interglacial stage in Minnesota and westward: Intern. Geol. Cong., Twelfth, Canada, 11 pp., 1913 (advance copy).

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CLASSIFIED SCHEME OF SUBJECT HEADINGS.

1. GENERAL.

Associations, meetings; Addresses; History; Philosophy; Biography; Bibliography; Educational; Text-books.

Classification; Nomenclature; Cartography; Technique; Field work; Surveys; Borings.

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

Experimental investigations; Miscellaneous.

2. REGIONAL.

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

3. 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; Wolframite; Vanadium; Uranium; Carnotite ores; Molybdenum; Molybdenite; Titanium; Rutile; Platinum; Iridium; Rhodium; Palladium; Cadmium; Monazite; Rare earths; Tantalum; Selenium; Tellurium; Zircon.

Coal; Anthracite; Coke; Peat; Lignite; Bituminous rock; Natural gas; Petroleum; Oil shales; Asphalt; Albertite; Gilsonite; Grahamite; Ozokerite.

Stone; Building stone; Granite; Bluestone; Limestone; Lime; Marble; Onyx; Sandstone; Clay; Kaolin; Bentonite; Fire clay; Ganister; Slate; Shale; Marl; Sand; Glass sand; Sand-lime brick; Gravel; Cement and cement materials; Concrete materials; Road materials; Trap; Steatite; Soapstone; Talc; Serpentine.

Precious stones; Diamonds; Sapphires; Turquoise; Tourmaline.

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

Asbestos; Feldspar; Mica; Quartz; Gypsum; Graphite; Fuller's earth; Infusorial earth; Magnesite; Mineral paint; Chromium; Chromite; Chromic iron ore; Fluorspar; Barite; Barytes; Strontium; Arsenic; Pyrite; Sulphur; Sulphate of soda; Cryolite; Phosphorus; Phosphate; Apatite; Potash; Alunite; Glauconite; Borax; Bromine; Salt; Natron deposits.

4. 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; Intrusions; Dikes; Laccoliths; Metamorphism; Contact phenomena.
Deformation; Folding; Faulting; Unconformities.
Conglomerates; Concretions; Stalactites; Jointing; Cleavage.
Sedimentation; Denudation; Erosion; Caves; Sink holes; Erratic bowlders; Weathering; Wind work; Dunes; Loess; Landslides.
Glaciers; Glacial erosion; Eskers; Kames; Moraines; Kettle holes.
Drainage changes.

5. PHYSIOGRAPHIC.

Geomorphy; Relief maps.
Valleys; Cirques; Deserts; Dunes; Deltas; Alluvial fans; Eskers; Kames; Mounds, natural; Natural bridges; Sink holes; Karsts.
Lakes; Swamps; Marshes; Everglades; Terraces; Beaches; Shore lines; Rivers; Meanders; Falls; Springs.

6. HISTORIC OR STRATIGRAPHIC.

Geologic history; Geologic time; Paleogeography; Paleogeographic maps; Paleoclimatology.
Geologic maps; Geologic formations described (list).
Pre-Cambrian; Paleozoic (undifferentiated); Cambrian; Ordovician; Silurian; Devonian; Carboniferous; Triassic; Jurassic; Cretaceous; Tertiary; Quaternary; Recent; Glacial geology; Glaciation; Glacial lakes; Ice ages.

7. PALEONTOLOGY.

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

8. PETROLOGY.

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

9. MINERALOGY.

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

10. UNDERGROUND WATER.

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

11. SOILS.

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Bays sandstone, Ordovician, Tennessee, Virginia, West Virginia, Kentucky: Grabau, 427.
Bearpaw, Cretaceous, Alberta: Dowling, 326.

Bearpaw formation, Cretaceous, Alberta, Saskatchewan, Manitoba: Malcolm, 741.

Bearpaw shale, Cretaceous, Montana: Stebinger, 1105.

Beauharnois formation, Ordovician, Quebec, Ontario: Raymond, 952.

Beaver group, Carboniferous, West Virginia: Krebs and Teets, 640.

Beaver Mountain group, Cretaceous?: Daly, 278.

Beckwith formation, Cretaceous and Jurassic, Idaho: Schultz and Richards, 1030.

Becraft member, Devonian, Maryland: Swartz *et al.*, 1138.

Bedford formation, Devonian, Ohio: Prosser, 932.

Bedford formation, Mississippian, Ohio: Burroughs, 140.

Beech Hill Cove formation, Silurian, Nova Scotia: Twenhofel, 1172.

Beehive formation, Cambrian, Idaho and British Columbia: Daly, 278.

Beekmantown group, Ordovician, Quebec, Ontario: Raymond, 952.

Bellaire sandstone, Carboniferous, Ohio: Condit, 251.

Belly River, Cretaceous, Alberta: Dowling, 326.

Belly River formation, Cretaceous, Alberta, Saskatchewan: Malcolm, 741.

Belly River series, Cretaceous, Alberta: Dowling, 327.

Belt series, Algonkian, Montana: Emmons and Calkins, 360; Knopf, 626.

Belt series, pre-Cambrian, British Columbia and Alberta: Walcott, 1225.

Beltian system, pre-Cambrian, British Columbia: Daly, 279.

Benson formation, Cretaceous (Upper), British Columbia: Clapp, 199.

Benson limestone, Devonian, Utah: Hintze, 507.

Benton formation, Cretaceous, Alberta: Leach, 666; Malcolm, 741.

Benton formation, Cretaceous, Colorado: Grout *et al.*, 450.

Benton, Cretaceous, Manitoba, Saskatchewan: Dowling, 326.

Benton shale, Cretaceous, North Dakota: Leonard, 678.

Benwood limestone, Carboniferous, West Virginia: Hennen and Reger, 479.

Berea sandstone, Mississippian, Ohio: Burroughs, 140; Prosser, 932.

Bergman group, Cretaceous, Alaska: Smith, 1068.

Bertie limestone member, Silurian, New York: Kindle and Taylor, 619.

Bethany limestone, Iowa: Tilton, 1159.

Bighorn dolomite, Ordovician or Silurian, Wyoming: Blackwelder, 78.

Bighorn formation, Cretaceous, Alberta: Malcolm, 741.

Birch Creek schist, pre-Ordovician, Alaska: Maddren, 739; Prindle, 920, 930.

Birmingham shale, Carboniferous, Ohio: Condit, 251; Mark, 747.

Birmingham shale, Carboniferous, West Virginia: Krebs and Teets, 640.

Black River formation, Ordovician, Quebec, Ontario: Raymond, 952.

Black River group, Ordovician, Quebec, Ontario: Raymond, 952.

Black River limestones, Ordovician, Ontario: Foerste, 378.

Blacksmith limestone, Cambrian, Utah: Richardson, 975.

Blackstone shales, Cretaceous, Alberta: Malcolm, 741.

Blaine formation, Permian, Oklahoma: Snider, 1078.

Bloomington formation, Cambrian, Utah: Richardson, 975.

Bloomsburg red shale, Silurian, Pennsylvania: Grabau, 427.

Bloomsbury formation, Carboniferous, New Brunswick: Young, 1347.

Blueberry Mountain series, New Hampshire: Lahee, 644.

Bohio conglomerate, Oligocene?, Panama Canal Zone: MacDonald, 723, 726.

Bolivar fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.

Bon Ami beds, Devonian, Quebec: Clarke, 213.

Bonaventure formation, Devono-Carboniferous, Quebec: Clarke, 213.

Bone Valley gravel, Pliocene, Florida: Matson and Sanford, 768.

Boss Point formation, Carboniferous, Nova Scotia: Bell, 64.

Boston Bar group, lower Mesozoic, British Columbia: Bowen, 93.

Bosworth formation, Cambrian (Upper), British Columbia: Allan, 13.

Boulder granite, Jurassic, British Columbia: Camsell, 170.

Bowling Green member, Silurian, Illinois and Missouri: Savage, 1007, 1008.

Bow River series, Cambrian, Alberta: Malcolm, 741.

Braeburn limestone, Carboniferous(?), British Columbia: Cairnes, 158.

Brasstown schist, Cambrian, North Carolina, Georgia: La Forge and Phalen, 643.

Brazean formation, Cretaceous, Alberta: Malcolm, 741.

Brazer limestone, Mississippian, Utah: Richardson, 975.

Bretonian, Cambrian, Nova Scotia: Hyde, 543.

Bretonian, Cambrian and Ordovician, New Brunswick: Young, 1347.

Brigham quartzite, Cambrian, Utah: Hintze, 507; Richardson, 975.

Bristol limestone, Carboniferous, West Virginia: Hennen and Reger, 479.

Brooklyn formation, Carboniferous?, British Columbia: LeRoy, 680.

Brooklyn formation, Carboniferous and post-Carboniferous, British Columbia: LeRoy, 680.
Broughton series, pre-Cambrian?, Quebec: Harvie, 466.
Brown's Mountain group, Ordovician, Nova Scotia: Twenhofel, 1172.
Brunswick shale, Trias, Pennsylvania: Wherry, 1266.
Brush Creek horizon, Carboniferous, Ohio: Condit, 251.
Brush Creek limestone, Carboniferous, Ohio: Mark, 747.
Brush Creek limestone, Carboniferous, West Virginia: Krebs and Teets, 640.
Brush Creek limestone and shale, Carboniferous, West Virginia: Hennen and Reger, 479.
Buffalo sandstone, Carboniferous, Ohio: Condit, 251.
Buffalo sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Buffalo sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Buffalo sandstone member, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Buffalo Hart moraine, Quaternary, Illinois: Shaw and Savage, 1042.
Burgess shale, Cambrian (Middle), Alberta, British Columbia: Allan, 13.
Burgoon sandstone member, Mississippian, Pennsylvania: Campbell *et al.*, 169.
Burton sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Cabots Head beds, Silurian, Ontario: Grabau, 427.
Câche Creek formation, Carboniferous, British Columbia: Drysdale, 331.
Câche Creek group, Paleozoic, British Columbia: Bowen, 93.
Caimito formation, Oligocene, Panama Canal Zone: MacDonald, 723, 726.
Caloosahatchee marl, Pliocene, Florida: Matson and Sanford, 768.
Calvert formation, Miocene, Virginia: Sanford, 1004.
Cambridge limestone, Carboniferous, Ohio: Condit, 251; Mark, 747.
Campbells Creek limestone, Carboniferous, West Virginia: Krebs and Teets, 640.
Canajoharie shale, Ordovician: Grabau, 427.
Canyon formation, Carboniferous, Texas: Gordon, 416.
Carbondale formation, Pennsylvanian, Illinois: Shaw and Savage, 1042.
Caribbean limestone, Pliocene, Panama Canal Zone: MacDonald, 723, 726.
Carlton moraine, Quaternary, New York: Kindle and Taylor, 619.
Carmack basalts, Tertiary or Pleistocene, British Columbia: Cairnes, 158.
Cascade gneissic batholith, Jurassic, Washington, British Columbia: Daly, 278.
Cassville plant shale, Carboniferous, West Virginia: Hennen and Reger, 479.
Castle Mountain group, Cambrian and Ordovician, Alberta: Malcolm, 741.
Castle Peak stock, Miocene, Washington, British Columbia: Daly, 278.
Cataract formation, Ordovician, Ontario: Parks, 887, 888, 890.
Cataract formation, Silurian, New York and Ontario: Schuchert, 1023, 1025.
Cataract formation, Silurian, Ontario: Williams, 1291, 1293.
Cataract (Medina) formation, New York and Ontario: Taylor, 1149.
Cataract sandstone, Silurian, Ontario: Parks, 888.
Cat Head limestone, Ordovician, Manitoba: Dowling, 326; Malcolm, 741; Wallace, 1230.
Cathedral batholith, Tertiary, Washington, British Columbia: Daly, 278.
Cathedral formation, Cambrian (Middle), Alberta, British Columbia: Allan, 13.
Catoctin schist, pre-Cambrian, Virginia: Watson and Cline, 1244.
Catskill formation, Devonian, Maryland: Prosser and Swartz, 936; Swartz, 1137.
Catskill formation, Devonian, New York to Virginia: Barrell, 45.
Cattaraugus formation, New York, Pennsylvania: Barrell, 45.
Cayuga group, Silurian, New York: Kindle and Taylor, 619.
Cedar district formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Cedar limestone, Devonian, Missouri, Iowa: Keyes, 604.
Cedar volcanic series, Oligocene, British Columbia: Camsell, 170.
Cedar Valley formation, Devonian, Iowa: Keyes, 610.
Chagrin formation, Devonian, Ohio: Prosser, 932.
Chalky Mount group, Barbados: Cunningham-Craig, 270.
Chancellor formation, Cambrian (Upper), British Columbia: Allan, 13.
Channahon limestone, Silurian, Illinois: Savage, 1007, 1008.
Chase quartzite member, pre-Cambrian, British Columbia: Daly, 279.
Chattahoochee formation, Oligocene, Florida: Matson and Sanford, 768; Sellards and Gunter, 1038.
Chattanooga shale, Devonian, Tennessee: Burchard, 135.
Chattanooga shale, Mississippian, Tennessee: Butts, 155.
Chazy, Ordovician, Quebec, Ontario: Raymond, 952.
Chehalis formation, Eocene, Washington: Arnold and Hannibal, 18.
Chelmsford sandstone, pre-Cambrian, Ontario: Coleman, 231, 237.
Chemung formation, Devonian, New York, Pennsylvania: Barrell, 45.
Chemung sandstone member, Devonian, Maryland: Swartz, 1137.

Chesapeake group, Miocene, Virginia: Sanford, 1004.
Chetang limestones, Cambrian, British Columbia and Alberta: Walcott, 1225.
Chickamauga limestone, Ordovician, Tennessee: Burchard, 135.
Chieftain Hill volcanics, Tertiary (?), British Columbia: Cairnes, 158.
Chilliwack series, Carboniferous, Washington, British Columbia: Daly, 278.
Chilliwack volcanic formation, Carboniferous, Washington, British Columbia: Daly, 278.
Chipola marl member, Oligocene, Florida: Matson and Sanford, 768.
Choctawhatchee marl, Miocene, Florida: Matson and Sanford, 768; Sellards and Gunter, 1038.
Chopaka basic intrusives, Carboniferous?, Washington: Daly, 278.
Choptank formation, Miocene, Virginia: Sanford, 1004.
Chouteau limestone, Carboniferous, Missouri: Keyes, 604.
Chugwater formation, Triassic, Wyoming: Blackwelder, 76.
Cisco formation, Carboniferous, Texas: Gordon, 416.
Claggett, Cretaceous, Alberta: Dowling, 326.
Claggett formation, Cretaceous, Alberta: Malcolm, 741.
Claggett shale, Cretaceous, Montana: Stebinger, 1105.
Clarksburg limestone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Clarksburg red shale, Carboniferous, West Virginia: Hennen and Reger, 479.
Clear Fork formation, Permian, Texas: Gordon, 416.
Clearwater shale, Cretaceous, Alberta: Malcolm, 741.
Cleveland shale, Devonian, Ohio; Prosser, 932.
Cleveland shale, Mississippian, Ohio: Burroughs, 140.
Clinch sandstone, Ordovician-Silurian, Virginia, West Virginia, Kentucky: Grabau, 427.
Clinton formation, Silurian, New York: Kindle and Taylor, 619.
Clinton formation, Silurian, Ontario: Parks, 887, 888.
Clinton limestone, Silurian, New York and Ontario: Taylor, 1149.
Clinton lower limestones, Silurian, New York and Ontario: Schuchert, 1023.
Clinton shale, Silurian, New York and Ontario: Schuchert, 1023.
Clinton upper limestone, Silurian, New York and Ontario: Schuchert, 1023.
Coalburg sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Coast Range intrusives, Jurassic(?), British Columbia: Cairnes, 158.
Coast Range intrusives, upper Jurassic(?), British Columbia: Bancroft, 35.
Cobalt series, pre-Cambrian, Canada: Wilson, 1304.
Cobalt series, pre-Cambrian, Ontario: Burrows, 144; Collins, 244, 247; Miller, 815, 817, 820.
Cobalt series, pre-Cambrian, Ontario and Quebec: Wilson, 1303.
Cobleskill dolomite, Silurian, New York: Kindle and Taylor, 619.
Coconino sandstone, Pennsylvanian, Arizona: Robinson, 987.
Coeymans member, Devonian, Maryland: Swartz *et al.*, 1138.
Coldbrookian Cambian, Nova Scotia, New Brunswick: Hyde, 543.
Coldbrookian, pre-Cambrian, New Brunswick: Young, 1347.
Coldwater group, Eocene?, British Columbia: Drysdale, 331.
Coldwater series, Oligocene, British Columbia: Camsell, 170.
Collingwood black shales, Ordovician, Ontario: Foerste, 378.
Collingwood formation, Ordovician, Ontario: Foerste, 378; Parks, 890.
Collingwood formation, Ordovician, Quebec, Ontario: Raymond, 952.
Colorado formation, Cretaceous, Montana: Emmons and Calkins, 360.
Colorado shale, Cretaceous, Montana: Stebinger, 1105.
Colquitz gneiss, Mesozoic, British Columbia: Clapp, 199.
Columbia group, Pleistocene, Virginia: Sanford, 1004.
Columbus limestone, Devonian, Ohio: Kindle, 616.
Colwood sands and gravels, Pleistocene, British Columbia: Clapp, 199.
Comanche series, Cretaceous, Texas: Gordon, 416.
Conemaugh formation, Carboniferous, Ohio: Condit, 251.
Conemaugh formation, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Conemaugh series, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Connellsville sandstone, Carboniferous, Ohio: Condit, 251.
Connellsville sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Connellsville (lower) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Connoquenessing sandstone, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Connoquenessing (lower), Carboniferous, West Virginia: Hennen and Reger, 479.
Connoquenessing (upper) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.

Copper Cliff arkose, pre-Cambrian, Ontario: Coleman, 237.
Coralville formation, Devonian, Iowa: Keyes, 610.
Cordilleran glaciation, Pleistocene, Rocky Mountains: Alden and Stebinger, 11.
Cordova sands and gravels, Pleistocene, British Columbia: Clapp, 199.
Corral Creek formation, pre-Cambrian, Alberta: Allan, 13.
Cortlandt series, pre-Cambrian, New York: Kemp, 588.
Coryell syenite batholith, Washington, British Columbia: Daly, 278.
Cougar formation, pre-Cambrian, British Columbia: Daly, 279.
Coutchiching, pre-Cambrian, Lake Superior region: Lawson, 665.
Coutchiching, pre-Cambrian, Ontario: Uglow, 1183.
Coutchiching series, pre-Cambrian, Canada: Wilson, 1304.
Covada formation, Carboniferous?, Washington: Weaver, 1251.
Cowrun sandstone, Carboniferous, Ohio: Condit, 251.
Cranberry formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Creston formation, Cambrian and pre-Cambrian, Idaho, Montana, and British Columbia: Daly, 278.
Creston formation, pre-Cambrian, British Columbia: Schofield, 1020.
Creston red shale, Carboniferous, West Virginia: Hennen and Reger, 479.
Crill limestone, Cretaceous, Iowa: Keyes, 609.
Croasdale quartzite, Silurian, New Jersey: Grabau, 427.
Crowsnest volcanics, Cretaceous, Alberta: Leach, 666.
Cucuracha formation, Oligocene, Panama Canal Zone: MacDonald, 723, 726.
Culebra formation, Oligocene?, Panama Canal Zone: MacDonald, 723.
Culebra formation, Tertiary (Eocene or Oligocene), Panama Canal Zone: MacDonald, 726.
Cultus formation, Triassic, Washington, British Columbia: Daly, 278.
Custer granite-gneiss, Jurassic?, Washington, British Columbia: Daly, 278.
Cutler formation, Permian, Colorado: Butters, 153.
Cyrene member, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Dakota, Cretaceous, Manitoba, Saskatchewan: Dowling, 326.
Dakota formation, Cretaceous, Alberta: Leach, 666; Malcolm, 741.
Dakota? formation, Cretaceous, Colorado: Grout *et al.*, 450.
Dakota sandstone, Cretaceous, New Mexico: Lee, 671.
Dakota sandstone, Cretaceous, North Dakota: Leonard, 678.
Dawson arkose, Tertiary (Eocene), Colorado: Lee, 671.
Day Creek dolomite, Permian, Oklahoma: Snider, 1078.
Decewsville formation, Devonian, Ontario: Kindle, 616.
De Courcy formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Delicias beds, Paleozoic, Mexico: Haarman, 453.
Dennys formation, Silurian, Maine: Bastin and Williams, 56; Williams, 1289.
Denver formation, Eocene, Colorado: Knowlton, 632.
Denver formation, Tertiary (Eocene), Colorado: Knowlton, 632.
Departure Bay calcarenites, Cretaceous (Upper), British Columbia: Clapp, 199.
Des Moines formation, Pleistocene, Iowa: Tilton, 1159.
Dewdney formation, Cambrian, Idaho and British Columbia: Daly, 278.
Dog Creek shale member, Permian, Oklahoma: Snider, 1078.
Dolores formation, Triassic, Colorado: Butters, 153.
Don beds, Pleistocene, Ontario: Coleman, 234, 236.
Double Mountain formation, Permian, Texas: Gordon, 416.
Dry Creek shale, Cambrian, Montana: Knopf, 626.
Dunkard series, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Dunnellon formation, Pliocene, Florida: Sellards, 1036.
Dunvegan beds, Cretaceous, Alberta: Malcolm, 741.
Dunvegan sandstones, Cretaceous, British Columbia: Galloway, 394.
Eagle formation, Cretaceous, Alberta: Malcolm, 741.
Eagle granodiorite, Jurassic, British Columbia: Camsell, 170.
Eagle sandstone, Cretaceous, Montana: Stebinger, 1105.
East Lynn sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Eastport formation, Silurian, Maine: Bastin and Williams, 56; Williams, 1289.
Eastwellington formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Eden clays, Ordovician, Ontario: Foerste, 378.
Eden formation, Ordovician, Ontario: Parks, 890.
Eden limestone, Ordovician, Ontario: Foerste, 378.
Edgewood limestone, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Edmonton, Cretaceous, Saskatchewan, Alberta: Dowling, 326.
Edmonton formation, Cretaceous, Alberta: Dowling, 327; MacLean, 736; Malcolm, 741.

Edmunds formation, Silurian, Maine: Bastin and Williams, 56; Williams, 1289.
Eldon formation, Cambrian (Middle), Alberta, British Columbia: Allan, 13.
Elephant limestone, Carboniferous (Pennsylvanian?), Utah: Butler, 147.
Elk conglomerates, Cretaceous, Alberta: Leach, 666.
Elk Lick limestone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Elk River formation, Pliocene, Oregon: Arnold and Hannibal, 18.
Ellensburg formation, Miocene, Washington: Waring, 1232.
Ellis formation, Jurassic, Montana: Emmons and Calkins, 360; Pardee, 880.
Elm Grove limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Embar formation, Permian?, Wyoming: Blackwelder, 76.
Emperador limestone, Oligocene, Panama Canal Zone: MacDonald, 723, 726.
Empire formation, Miocene, Oregon: Arnold and Hannibal, 18.
Empire shale, Algonkian, Montana: Knopf, 626.
Enid formation, Permian, Oklahoma: Snider, 1078.
Eparchean interval, pre-Cambrian, Lake Superior region: Lawson, 665.
Essex limestone, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Etcheminian, Cambrian, New Brunswick: Young, 1347.
Etcheminian, Cambrian, Nova Scotia: Hyde, 543.
Etna quartz monzonite porphyry: Crawford, 266.
Ewing limestone, Carboniferous, Ohio: Condit, 251; Mark, 747.
Ewing limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Extension formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Fabre series, pre-Cambrian, Ontario: Collins, 247.
Fairview formation, Cambrian (Lower), Alberta, British Columbia: Allan, 13.
Fayette formation, Devonian, Iowa: Keyes, 610.
Fernando formation, Tertiary, California: Louderback, 703.
Fernie formation, Jurassic, Alberta: Leach, 666.
Fernie shale, Jurassic, Alberta: Allan, 13; Malcolm, 741.
Fernie shale, Jurassic, British Columbia, Alberta, Saskatchewan: Dowling, 326.
Fish Creek sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Fish Haven dolomite, Ordovician, Utah: Richardson, 975.
Fitch Hill arkose, New Hampshire: Lahee, 644.
Fitch Hill granite gneiss, New Hampshire: Lahee, 644.
Flathead beds, Cretaceous, Alberta: Leach, 666.
Flathead quartzite, Cambrian, Montana: Billingsley, 75; Emmons and Calkins, 360; Knopf, 626.
Fordham gneiss, pre-Cambrian, New York: Kemp, 588.
Fort Payne formation, Carboniferous, Tennessee: Burchard, 135.
Fort St. John shales, Cretaceous, Alberta: Malcolm, 741.
Fort St. John shales, Cretaceous, British Columbia: Galloway, 394.
Fort Union formation, Tertiary, Montana: Rogers, 995; Stebinger, 1105.
Fort Union formation, Tertiary (Eocene), North Dakota: Herald, 481.
Fort Union formation, Tertiary, North Dakota: Leonard, 678.
Fort Union formation, Tertiary, Wyoming: Wegemann, 1259.
Fountain formation, Pennsylvanian, Colorado: Butters, 153.
Fox Hills sandstone, Cretaceous, North Dakota: Leonard, 678.
Freeport (lower) limestone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Freeport (lower) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Freeport (upper) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Freeport (upper) sandstone, Carboniferous, West Virginia; Hennen and Reger, 479. Krebs and Teets, 640.
Fulton green shale, Carboniferous, West Virginia: Hennen and Reger, 479.
Fulton shale, Ordovician, Cincinnati region: Grabau, 427.
Gabriola formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Galisteo sandstone, Tertiary?, New Mexico: Lee, 671.
Galton series, Montana and British Columbia: Daly, 278.
Garden City limestone, Ordovician, Utah: Richardson, 975.
Garfield formation, Pennsylvanian, Colorado: Crawford, 266.
Gaspe sandstone, Devonian, Quebec: Clarke, 213.
Gasport limestone member, Silurian, New York: Kindle and Taylor, 619.
Gateway formation, Cambrian?, British Columbia: Schofield, 1020.
Gateway formation, Montana and British Columbia: Daly, 278.
Gatun formation, Oligocene, Panama Canal Zone: MacDonald, 723, 726.
Genesee black shale, Devonian, Maryland: Swartz, 1137.
Geneva limestone, Devonian, Indiana: Kindle, 616.

George River series, pre-Cambrian, Nova Scotia: Young, 1347.
Gila conglomerate, Quaternary, Arizona: Meinzer, 785.
Gilboy sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Gilmore limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Gilmore sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Girardeau limestone, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Glacier division, pre-Cambrian, British Columbia: Daly, 279.
Gold-bearing series, pre-Cambrian, Nova Scotia: Faribault, 367.
Goldenville formation, Cambrian, or pre-Cambrian, Nova Scotia: Malcolm, 740.
Goldenville formation, pre-Cambrian, Nova Scotia: Faribault, 367.
Goodsir shales, Ordovician, British Columbia: Allan, 13.
Grafton sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Grainger shale, Devonian and Carboniferous, Tennessee: Burchard, 135.
Grampian limestone, Cambrian? and Ordovician, Utah: Butler, 147.
Grand Forks schist, Washington, British Columbia: Daly, 278.
Grand Grève beds, Devonian, Quebec: Clarke, 213.
Grand Rapids sandstone, Cretaceous, Alberta: Malcolm, 741.
Grand Rapids (lower) formation, Carboniferous, Michigan: Gregory, 442.
Grand Rapids (upper) formation, Carboniferous, Michigan: Gregory, 442.
Grassy black shales, Carboniferous, Missouri, Iowa: Keyes, 604.
Great Smoky formation, Cambrian, North Carolina, Georgia: La Forge and Phalen, 643.
Greenbrier limestone, Mississippian, West Virginia: Hennen and Reger, 479.
Green Pond conglomerate, Silurian, New York, New Jersey: Grabau, 427.
Green River formation, Tertiary, Colorado: Woodruff, 1325.
Greer formation, Permian, Oklahoma: Snider, 1078.
Grenville series, pre-Cambrian, Canada: Wilson, 1305.
Grenville series, pre-Cambrian, New York: Kemp, 588; Miller 822.
Grenville series, pre-Cambrian, Ontario: Adams and Barlow, 8; Coleman, 231, 237.
Grenville series, pre-Cambrian, Quebec: Stansfield, 1101.
Greyson(?) shale, Algonkian, Montana: Emmons and Calkins, 360.
Grinnell formation, Cambrian, pre-Devonian, Montana and British Columbia: Daly, 278.
Guelph formation, Silurian, Ontario: Parks, 887.
Halifax formation, Cambrian, Nova Scotia: Malcolm, 740.
Halifax formation, pre-Cambrian, Nova Scotia: Faribault, 367.
Hamilton member, Devonian, Maryland: Prosser *et al.*, 937.
Hamilton shales, Devonian, Ontario: Parks, 886, 887, 890.
Hammond fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.
Hannibal shales, Carboniferous, Missouri, Iowa: Keyes, 604.
Hardman fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.
Harrington formation, Triassic, Utah: Butler, 147.
Haslam formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Hasmark formation, Cambrian, Montana: Billingsley, 75; Emmons and Calkins, 360.
Hastings series, pre-Cambrian, Ontario: Adams and Barlow, 8.
Hawarden shales, Cretaceous, Iowa: Keyes, 609.
Hawthorne formation, Oligocene, Florida: Matson and Sanford, 768.
Hawthorne formation, Oligocene, Florida: Sellards and Gunter, 1038.
Hazleton group, Cretaceous, British Columbia: McConnell, 719.
Hector formation, pre-Cambrian, Alberta: Allan, 13.
Hefty formation, Montana and British Columbia: Daly, 278.
Helderberg formation, Devonian, Maryland: Swartz *et al.*, 1138.
Helena limestone, Algonkian, Montana: Knopf, 626.
High Falls shale, Silurian, New York: Grabau, 427.
Hitka formation, Cambrian, British Columbia and Alberta: Walcott, 1225.
Hodges shale member, Cambrian, Utah: Richardson, 975.
Homewood sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Homewood sandstone, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Horsethief sandstone, Cretaceous, Montana: Stebinger, 1105.
Horton series, Carboniferous, Nova Scotia: Bell, 64.
Hota formation, Cambrian, British Columbia and Alberta: Walcott, 1225.
Hozomeen series, Carboniferous, Washington, British Columbia: Daly, 278.
Hudson series, Ordovician, New York, Pennsylvania: Grabau, 427.

Hundred sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Huntingdon formation, Eocene, Washington, British Columbia: Daly, 278.
Huron shale, Devonian, Ohio: Prosser, 932.
Huronian, pre-Cambrian, Canada: Wilson, 1305.
Huronian, pre-Cambrian, Ontario: Collins, 244, 247.
Huronian system, pre-Cambrian, Canada: Wilson, 1304.
Huronian (lower), pre-Cambrian, Lake Superior region: Lawson, 665.
Huronian (lower), pre-Cambrian, Ontario: Coleman, 231, 237; Parsons, 892.
Huronian (upper), pre-Cambrian, Lake Superior region: Lawson, 665.
Huronian (upper) (Animikie), pre-Cambrian, Ontario: Parsons, 892.
Huronian (upper) or Animikie, pre-Cambrian, Ontario: Coleman, 231, 237.
Ice River intrusive complex, post-Cretaceous, Alberta: Allan, 13.
Illecillewaet quartzite, pre-Cambrian, British Columbia: Daly, 279.
Illinoian drift, Quaternary: Deeley, 304.
Illinoian drift, Quaternary, Illinois: Shaw and Savage, 1041.
Ingleside formation, Pennsylvanian, Colorado: Butters, 153.
Intermediate limestone, Devonian, Alberta: Allan, 13.
Intermediate series, Devonian, Alberta: Malcolm, 741.
Inwood marble, pre-Cambrian, New York: Kemp, 588.
Ione formation, Miocene, California: Dickerson, 314.
Irene conglomerate formation, pre-Cambrian, Idaho and British Columbia: Daly, 278.
Irene volcanic formation, pre-Cambrian, Idaho and British Columbia: Daly, 278.
Irondequoit limestone member, Silurian, New York: Kindle and Taylor, 619.
Jackass Mountain series, Cretaceous, British Columbia: Bowen, 93.
Jacksonville formation, Miocene, Florida: Matson and Sanford, 768; Sellards and Gunter, 1038.
James River formation, Ordovician, Nova Scotia: Twenhofel, 1172.
Jefferson dolomite, Devonian, Utah: Richardson, 975.
Jefferson limestone, Devonian, Montana: Emmons and Calkins, 360; Knopf, 626.
Jefferson limestone, Devonian, Montana and British Columbia: Daly, 278.
Jefferson limestone, Devonian, Utah: Hintze, 507.
Jeffersonville limestone, Devonian, Kentucky: Kindle, 616.
Jennings formation, Devonian, Maryland: Barrell, 45; Prosser and Swartz, 936; Swartz, 1137.
Jerseyan drift, Quaternary: Deeley, 304.
Joggins formation, Carboniferous, Nova Scotia: Bell, 64.
Johannian, Cambrian, New Brunswick: Young, 1347.
Johannian, Cambrian, Nova Scotia: Hyde, 543.
Johnstown cement limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Jollytown limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Jollytown sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Judith River formation, Cretaceous, Montana: Stebinger, 1105.
Juniata formation, Pennsylvania: Grabau, 427.
Kagawong member, Silurian, Ontario: Williams, 1291.
Kaibab limestone, Pennsylvanian, Arizona: Robinson, 987.
Kamloops volcanic group, Miocene?, British Columbia: Drysdale, 331.
Kamouraska formation, Cambrian?, Quebec: Young, 1347.
Kanawha series, Carboniferous, West Virginia: Krebs and Teets, 640.
Kangaroo formation, Permo-Pennsylvanian (?), Colorado: Crawford, 266.
Kansan drift, Quaternary: Deeley, 304.
Kansan (?) drift, Quaternary, Illinois: Shaw and Savage, 1042.
Kansan series, Pleistocene: Alden and Stebinger, 11.
Keefer sandstone, Silurian, Maryland, West Virginia: Grabau, 427.
Keewatin, pre-Cambrian, Canada: Wilson, 1304.
Keewatin, pre-Cambrian, Ontario: Burrows, 144; Coleman, 231, 237; Collins, 244; Miller, 815; Parsons, 892; Uglow, 1183.
Keewatin, pre-Cambrian, Quebec: Bancroft, 36.
Keewatin complex, pre-Cambrian, Ontario: Miller, 817.
Keewatin group, pre-Cambrian, Ontario: Collins, 247.
Keewatin series, pre-Cambrian, Lake Superior region: Lawson, 665.
Keewatin series, pre-Cambrian, Ontario: Miller, 787.
Keppel dolomites, Silurian, Ontario: Grabau, 427.
Kettle River formation, Oligocene, Washington, British Columbia: Daly, 278.
Kettle River formation, Tertiary (Oligocene), British Columbia: LeRoy, 680.
Keweenawan, pre-Cambrian, Canada: Wilson, 1304.
Keweenawan (?), pre-Cambrian, Ontario: Coleman, 237.
Keweenawan, pre-Cambrian, Ontario: Collins, 247; Parsons, 892.
Keweenawan, pre-Cambrian, Quebec: Bancroft, 36.
Keweenawan series, Cambrian or pre-Cambrian, Michigan: Lane, 655.

Keweenawan (Nipigon), pre-Cambrian, Lake Superior region: Lawson, 665.
Key Largo limestone, Pleistocene, Florida: Matson and Sanford, 768.
Keyser member, Devonian, Maryland: Swartz *et al.*, 1138.
Key West oolite, Pleistocene, Florida: Matson and Sanford, 768.
Kigluaik group, pre-Ordovician, Alaska: Moffit, 827; Smith, 1070.
Kintla formation, pre-Devonian, Montana and British Columbia: Daly, 278.
Kishenehn formation, Tertiary, Montana and British Columbia: Daly, 278.
Kitanning (lower) fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.
Kitchener formation, Cambrian, Idaho, Montana, and British Columbia: Daly, 278.
Kitchener formation, pre-Cambrian, British Columbia: Schofield, 1020.
Kitsalas formation, Trias (?), British Columbia: McConnell, 719.
Klusha intrusives, Tertiary (?), British Columbia: Cairnes, 158.
Knob Hill group, Carboniferous and post-Carboniferous, British Columbia: LeRoy, 680.
Knox dolomite, Cambrian and Ordovician, Tennessee: Burchard, 135.
Knoydart formation, Devonian, Nova Scotia: Twenhofel, 1172.
Kokomo limestone, Silurian, Indiana: Kindle, 618.
Kootenai formation, Cretaceous, Alberta: Malcolm, 741.
Kootenai formation, Cretaceous, Montana: Emmons and Calkins, 360; Pardee, 880; Stebinger, 1105.
Kootenay, Cretaceous, British Columbia, Alberta: Dowling, 326.
Kootenay coal measures, Cretaceous, Alberta: Allan, 13.
Kootenay formation, Cretaceous, Alberta: Leach, 666.
Kootenay granite, Jurassic (?), British Columbia: Schofield, 1020.
Koyukuk group, Cretaceous or Jurassic, Alaska: Smith, 1068.
Kruger alkaline body, Tertiary?, Washington, British Columbia: Daly, 278.
Laberge series, Jura-Cretaceous, British Columbia: Cairnes, 158.
LaBiche shales, Cretaceous, Alberta: Malcolm, 741.
Lafayette (?) formation, Pliocene?, Florida: Matson and Sanford, 768.
Lafayette formation, Pliocene?, Virginia: Sanford, 1004.
Lafayette formation, Tertiary, Delaware: Matson, 766.
Lake Agassiz silt, Quaternary, North Dakota: Leonard, 678.
Lake Louise formation, Cambrian (Lower), Alberta, Britsh Columbia: Allan, 13.
Laketown dolomite, Silurian, Utah: Richardson, 975.
Lance formation, Cretaceous or Tertiary, Montana: Rogers, 995.
Lance formation, Cretaceous or Tertiary, North Dakota: Leonard, 678.
Lance formation, Tertiary, Montana: Stebinger, 1105.
Langston limestone, Cambrian, Utah: Richardson, 975.
Las Cascadas agglomerate, Panama Canal Zone: MacDonald, 723, 726.
Laurentian, pre-Cambrian, Canada: Wilson, 1304, 1305.
Laurentian, pre-Cambrian, Lake Superior region: Lawson, 665.
Laurentian, pre-Cambrian, Ontario: Burrows, 144; Coleman, 231, 237; Collins, 244, 247; Miller, 815, 817, 820; Uglow, 1183.
Laurentian, pre-Cambrian, Quebec: Bancroft, 36.
Laurentian system, pre-Cambrian, Ontario: Adams and Barlow, 8.
Laurie formation, pre-Cambrian, British Columbia: Daly, 279.
Lebo shale member, Tertiary, Montana: Rogers, 995, 996.
Leda clay, Pleistocene, Quebec: Stansfield, 1101.
Lennep sandstone, Cretaceous, Montana: Stebinger, 1105.
Leray member of Lowville formation, Ordovician, Ontario: Foerste, 378.
"Leroux formation," Triassic, Arizona: Robinson, 987.
Lévis formation, Ordovician, Quebec: Raymond, 951.
Lewis series, pre-Devonian, Montana and British Columbia: Daly, 278.
Lewistown limestone, Silurian, Pennsylvania: Grabau, 427.
Lightning Creek diorite, Miocene?, Washington, British Columbia: Daly, 278.
Lime Creek shales, Devonian, Missouri, Iowa: Keyes, 604.
Lisburne limestone, Carboniferous, Alaska: Smith, 1068.
Listmore formation, Pennsylvanian, Nova Scotia: Twenhofel, 1172.
"Lithodendron formation," Triassic, Arizona: Robinson, 987.
Little River group, Carboniferous, New Brunswick: Young, 1347.
Lockatong (Gwynedd) shale, Trias, Pennsylvania: Wherry, 1266.
Lockport dolomite, Silurian, New York: Kindle and Taylor, 619.
Lockport dolomite, Silurian, New York and Ontario: Schuchert, 1023.
Lockport dolomite, Silurian, Ontario: Parks, 887, 888.
Lockport formation, Silurian, Ontario: Parks, 890; Williams, 1293.
Lockport (Niagara) limestone, Silurian, New York and Ontario: Taylor, 1149.

Logan sills, pre-Cambrian, Ontario: Parsons, 892.
Lone Star formation, Cambrian, Idaho and British Columbia: Daly, 278.
Longwood shale, Silurian, New Jersey: Grabau, 427.
Loon River shales, Cretaceous, Alberta: Malcolm, 741.
Lorrain granite, pre-Cambrian, Ontario: Miller, 815, 817, 820.
Lorrain series, pre-Cambrian, Ontario: Collins, 244, 247.
Lorrain shale, Ordovician, Ontario: Coleman, 234, 236.
Lorraine, Ordovician, Ontario: Foerste, 378.
Lorraine formation, Ordovician, Ontario: Parks, 889, 890.
Lorraine group, Ordovician, Quebec, Ontario: Raymond, 952.
Lorraine (Frankfort) formation, Ordovician, Quebec: Raymond, 951.
Lostmans River limestone, Pleistocene, Florida: Matson and Sanford, 768.
Loudoun formation, Cambrian, Virginia: Watson and Cline, 1244.
Louisiana limestone, Carboniferous, Missouri, Iowa: Keyes, 604.
Lowerre quartzite, pre-Cambrian, New York: Kemp, 588.
Lowville formation, Ordovician, Ontario: Johnston, 568.
Lowville formation, Ordovician, Quebec, Ontario: Raymond, 952.
Lowville shales, Ordovician, Ontario: Foerste, 378.
Loyalhanna limestone member, Mississippian, Pennsylvania: Campbell *et al.*, 169.
Lucas formation, Devonian, Iowa: Keyes, 610.
Lykins formation, Pennsylvanian and Permian, Colorado: Butters, 153.
Lyman schists, New Hampshire: Lahee, 644.
Lynx limestones, Cambrian, British Columbia and Alberta: Walcott, 1225.
Lyons formation, Pennsylvanian, Colorado: Butters, 153.
McAdam formation, Silurian, Nova Scotia: Twenhofel, 1172.
McAra's Brook formation, Mississippian, Nova Scotia: Twenhofel, 1172.
Maccrady formation, Carboniferous (Mississippian), Virginia: Stose, 1127.
MacDonald formation, Montana and British Columbia: Daly, 278.
McKenzie formation, Silurian, Maryland, West Virginia: Grabau, 427.
McKim graywacke, pre-Cambrian, Ontario: Coleman, 237.
McLeansboro formation, Pennsylvanian, Illinois: Shaw and Savage, 1042.
McNaughton sandstones, Cambrian, British Columbia and Alberta: Walcott, 1225.
Madison limestone, Carboniferous, Montana: Knopf, 626.
Madison limestone, Carboniferous (Mississippian), Montana: Pardee, 880.
Madison limestone, Mississippian, Idaho: Schultz and Richards, 1030.
Madison limestone, Mississippian, Montana: Emmons and Calkins, 360.
Madison limestone, Mississippian, Utah: Richardson, 975.
Mahoning horizon, Carboniferous, Ohio: Condit, 251.
Mahoning sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Mahoning sandstone member, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Mahto sandstones, Cambrian, British Columbia and Alberta: Walcott, 1225.
Malden sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Malignant Cove formation, Ordovician?, Nova Scotia: Twenhofel, 1172.
Mancos shale, Cretaceous, New Mexico: Lee, 671.
Manhattan schist, pre-Cambrian, New York: Kemp, 588.
Manitoba, Devonian, Manitoba: McLean, 736.
Manitoban, Devonian, Manitoba: Dowling, 326.
Manitoulin member, Silurian, Ontario: Williams, 1291.
Mannington sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Maquoketa beds, Ordovician, Iowa: Slocum, 1057.
Marble Bay formation, upper Paleozoic, British Columbia: Bancroft, 35.
Marble Canyon limestone, Carboniferous, British Columbia: Drysdale, 331.
Marcellus black shale member, Devonian, Maryland: Prosser *et al.*, 937.
Marianna limestone, Oligocene, Florida, Matson and Sanford, 768.
Marietta (lower) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Marietta (upper) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Marsh shale, Algonkian, Montana: Knopf, 626.
Martinsburg shale, Ordovician, Pennsylvania: Grabau, 427.
Matagami series, pre-Cambrian, Quebec: Bancroft, 36.
Mauch Chunk formation, Mississippian, Pennsylvania: Barrell, 45; Campbell *et al.*, 169.
Mauch Chunk series, Mississippian, West Virginia: Hennen and Reger, 479.
Maxfield formation, Ordovician, Utah: Hintze, 507.
Maxville limestone, Carboniferous, Michigan: Gregory, 442.

Maysville limestone, Wisconsin: Grabau, 427.

Maywood clays, Pleistocene, British Columbia: Clapp, 199.

Maywood formation, Silurian (?), Montana: Emmons and Calkins, 360.

Meagher limestone, Cambrian, Montana: Knopf, 626.

Medina beds, Silurian, Great Lakes region: Grabau, 427.

Medina formation, Ordovician, Ontario: Parks, 887, 888.

Medina formation, Silurian, New York and Ontario: Schuchert, 1023.

Medina group (lower part), Ordovician or Silurian, New York: Kindle and Taylor, 619.

Medina group (upper part), Silurian, New York: Kindle and Taylor, 619.

Medina sandstone, New York and Ontario: Taylor, 1149.

Mendez formation, Cretaceous, Mexico: White, 1275.

Merced formation, Miocene, Pliocene, California, Oregon, Washington: Arnold and Hannibal, 18.

Mercer (lower) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.

Mesaverde formation, Cretaceous, Colorado: Woodruff, 1325.

Mesaverde formation, Cretaceous, New Mexico: Lee, 671.

Metchosin volcanics, Eocene, British Columbia: Clapp, 199.

Meteor granodiorite, Washington: Weaver, 1251.

Miami oolite, Pleistocene, Florida: Matson and Sanford, 768.

Midway volcanic group, Miocene, Washington, British Columbia: Daly, 278.

Midway volcanic group, Tertiary (Miocene), British Columbia: LeRoy, 680.

Miette sandstones, pre-Cambrian, British Columbia and Alberta: Walcott, 1225.

Millwood, Cretaceous, Manitoba: Dowling, 326.

Millwood shales, Cretaceous, Manitoba: Malcolm, 741.

Mispeck formation, Carboniferous, New Brunswick: Young, 1347.

Modelo formation, Tertiary, California: Louderback, 703.

Moencopie formation, Permian?, Arizona: Robinson, 987.

Monk formation, pre-Cambrian, Idaho and British Columbia: Daly, 278.

Monongahela series, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.

Monroe beds, Silurian, Michigan: Grabau, 427.

Monroe formation, Silurian, Ontario: Parks, 886, 887, 890.

Moose metargillite, pre-Cambrian, British Columbia: Daly, 279.

Monterey formation, Oligocene-Miocene, California, Oregon, Washington: Arnold and Hannibal, 18.

Monterey series, California: Kew and Stoner, 597.

Monterey series, Tertiary, California: Louderback, 703.

Morehouse quartzite, Ordovician and Silurian?, Utah: Butler, 147.

Morgan formation, Utah: Hintze, 507.

Morgantown sandstone, Carboniferous, Ohio: Condit, 251.

Morgantown sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.

Morgantown sandstone member, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.

Morrison formation, Jurassic, Colorado: Butters, 153; Grout *et al.*, 450.

Mount Hope formation, Pleistocene, Panama: Brown and Pilsbry, 115.

Mount Morris limestone, Carboniferous, West Virginia: Hennen and Reger, 479.

Mount Roberts formation, Carboniferous?, British Columbia: LeRoy, 680.

Mount Roberts formation, Carboniferous and post-Carboniferous, British Columbia: LeRoy, 680.

Mt. Savage fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.

Mount Stevens group, pre-Devonian, British Columbia: Cairnes, 158.

Mt. Whyte formation, Cambrian (Lower), Alberta, British Columbia: Allan, 13.

Mowitza shale, Devonian, Utah: Butler, 147.

Moydart formation, Silurian, Nova Scotia: Twenhofel, 1172.

Moyie formation, Cambrian, Idaho, Montana, and British Columbia: Daly, 278.

Moyie sills, Idaho, British Columbia: Daly, 278.

Mumm limestones, Cambrian, British Columbia and Alberta: Walcott, 1225.

Murphy marble, Cambrian, Georgia: La Forge and Phalen, 643.

Nakimu limestone, pre-Cambrian, British Columbia: Daly, 279.

Nanaimo series, Cretaceous, British Columbia: Clapp, 199.

Nanjemoy formation, Eocene, Virginia: Sanford, 1004.

Nantahela slate, Cambrian, North Carolina, Georgia: La Forge and Phalen, 643.

Napoleon sandstone, Carboniferous, Michigan: Gregory, 442.

Nashua marl, Pliocene, Florida: Matson and Sanford, 768.

Nebraskan drift, Quaternary: Deeley, 304.

Neihart quartzite, Algonkian, Montana: Emmons and Calkins, 360.

Nelson batholith, Jurassic?, British Columbia: LeRoy, 680.

Newcastle formation, Cretaceous (Upper), British Columbia: Clapp, 199.

New Glasgow conglomerate, Nova Scotia: Young, 1347.
Newland formation, Algonkian, Montana: Emmons and Calkins, 360.
Newman limestone, Carboniferous, Tennessee: Burchard, 135.
Newman limestone, Carboniferous (Mississippian), Virginia: Stose, 1127.
New Scotland member, Devonian, Maryland: Swartz *et al.*, 1138.
Niagara Falls moraine, Quaternary, New York: Kindle and Taylor, 619.
Niagara group, Silurian, New York: Kindle and Taylor, 619.
Nicola formation, Jurassic-Triassic, British Columbia: Drysdale, 331.
Nineveh limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Nineveh sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Niobrara, Cretaceous, Manitoba, Saskatchewan: Dowling, 326.
Niobrara formation, Cretaceous, Alberta, Manitoba, Saskatchewan: Malcolm, 741.
Niobrara formation, Cretaceous, Colorado: Grout *et al.*, 450.
Niobrara formation, Cretaceous, North Dakota: Leonard, 678.
Niobrara limestones, Cretaceous, Iowa: Keyes, 609.
Nipigon, pre-Cambrian, Ontario: Parsons, 892.
Nipissing diabase, pre-Cambrian, Ontario: Collins, 247; Miller, 815, 817, 820.
Nishnabotna sandstones, Cretaceous, Iowa: Keyes, 609.
Noatak sandstone, Carboniferous, Alaska: Smith, 1068.
Noblesville dolomite, Silurian, Indiana: Kindle, 618.
Noix oolite member, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Nome group, Paleozoic, Alaska: Moffit, 827.
Nora limestone, Devonian, Iowa: Thomas, 1155.
Norian series, pre-Cambrian, Canada: Wilson, 1305.
Northumberland formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Nottely quartzite, Cambrian, North Carolina, Georgia: La Forge and Phalen, 643.
Nounan limestone, Cambrian, Utah: Richardson, 975.
Nugget sandstone, Jurassic or Triassic, Idaho: Schultz and Richards, 1030.
Oak Grove sand member, Oligocene, Florida: Matson and Sanford, 768.
Ocala limestone, Oligocene, Florida: Watson and Sanford, 768.
Oceanic beds, Barbados: Cunningham-Craig, 270.
Odanah, Cretaceous, Manitoba: Dowling, 326.
Odanah formation, Cretaceous, Manitoba: Malcolm, 741.
Ogden quartzite, Algonquin and Cambrian, Utah: Hintze, 507.
Ogden quartzite, Cambrian, Utah: Loughlin, 706.
Ohio shale, Devonian, Ohio: Prosser, 932.
Olequa formation, Eocene, Washington: Arnold and Hannibal, 18.
Oljato sandstone member, Triassic, Utah: Gregory, 446.
Onaping tuff, pre-Cambrian, Ontario: Coleman, 231, 237.
Oneida conglomerate, Silurian, New York: Grabau, 427.
Oneonta formation, Devonian, New York: Barrell, 45.
Onondaga formation, Devonian, Ontario: Parks, 886, 887, 890.
Onondaga limestone, Devonian, New York: Kindle, 616; Kindle and Taylor, 619.
Onondaga limestone, Devonian, Ontario: Stauffer, 1102, 1103.
Onondaga shale member, Devonian, Maryland: Prosser *et al.*, 937.
Ontarian, pre-Cambrian, Lake Superior region: Lawson, 665.
Ontarian system, pre-Cambrian, Canada: Wilson, 1304.
Onwatin slate, pre-Cambrian, Ontario: Coleman, 231, 237.
Open Bay group, upper Paleozoic, British Columbia: Bancroft, 35.
Orca group, Paleozoic, Alaska: Capps and Johnson, 178.
Orindan formation, Tertiary, California: Merriam, 792.
Oriskany formation, Devonian, Maryland: Prosser *et al.*, 937; Swartz *et al.*, 1138.
Oriskany sandstone, Devonian, New York: Kindle, 616.
Oriskany sandstone, Devonian, Ontario: Parks, 886, 887, 890; Stauffer, 1102.
Osoyoos batholith, Jurassic, Washington, British Columbia: Daly, 278.
Oswayo formation, Mississippian, New York: Barrell, 45.
Oswego sandstone, Ordovician, New York: Grabau, 427.
Ottawa gneiss, pre-Cambrian, Quebec: Stansfield, 1101.
Ottawa series, pre-Cambrian, Canada: Wilson, 1305.
Otter granite, Tertiary, British Columbia: Camsell, 170.
Ottertail limestone, Cambrian (upper), British Columbia: Allan, 13.
Ouray limestone, Devonian-Mississippian, Colorado: Crawford, 266.
Paget formation, Cambrian (Upper), British Columbia: Allan, 13.
Palm Beach limestone, Pleistocene, Florida: Matson and Sanford, 768.
Pamelia formation, Ordovician, Quebec, Ontario: Raymond, 952.
Pamunkey group, Eocene, Virginia: Sanford, 1004.

Panama formation, Oligocene, Panama Canal Zone: MacDonald, 723, 726.
Paradise limestone, Silurian, Utah: Hintze, 507.
Park granite stock, Tertiary, Washington, British Columbia: Daly, 278.
Park shale, Cambrian, Montana: Knopf, 626.
Park City limestone, Pennsylvanian or Permian, Utah: Hintze, 507.
Parkhead sandstone, Devonian, Maryland: Swartz, 1137.
Parma sandstone, Carboniferous, Michigan: Gregory, 442.
Parson Bay group, Triassic, British Columbia: Bancroft, 35.
Pasayten andesite, Cretaceous, Washington, British Columbia: Daly, 278.
Pasayten series, Cretaceous, Washington, British Columbia: Daly, 278.
Pasayten volcanic formation, Cretaceous, Washington, British Columbia: Daly, 278.
Paskapoo, Tertiary, Saskatchewan, Alberta: Dowling, 326.
Paskapoo series, Cretaceous, Alberta: Malcolm, 741.
Patapsco formation, Cretaceous, Delaware: Matson, 766.
Patapsco formation, Cretaceous, Virginia: Sanford, 1004.
Patton? shale member, Mississippian, Pennsylvania: Campbell *et al.*, 169.
Patuxent formation, Cretaceous, Virginia: Sanford, 1004.
Payette formation, Tertiary, Idaho: Bowen, 91.
Peace River sandstones, Cretaceous, Alberta: Malcolm, 741.
Pelican sandstone, Cretaceous, Alberta: Malcolm, 741.
Pelican shale, Cretaceous, Alberta: Malcolm, 741.
Pembroke formation, Silurian, Maine: Bastin and Williams, 56; Williams, 1289.
Pend d'Oreille group, Carboniferous?, British Columbia: LeRoy, 680.
Pend d'Oreille group, Washington, British Columbia: Daly, 278.
"Peninsular" limestone, Oligocene, Florida: Matson and Sanford, 768.
Perkins group, upper Paleozoic, British Columbia: Cairnes, 158.
Perry formation, Devonian, Maine: Bastin and Williams, 56.
Perry formation, Silurian, Maine: Williams, 1289.
Phillips formation, Cambrian?, British Columbia: Schofield, 1020.
Phillips formation, Montana and British Columbia: Daly, 278.
Phoenix volcanic group, Mesozoic?, Washington, British Columbia: Daly, 278.
Phosphoria formation, Permian?, Idaho: Schultz and Richards, 1030.
Phosphoria formation, Permian?, Utah: Richardson, 975.
Pierre, Cretaceous, Manitoba, Saskatchewan: Dowling, 326.
Pierre formation, Cretaceous, Colorado: Grout *et al.*, 450.
Pierre shale, Cretaceous, North Dakota: Leonard, 678.
Pierre shales, Cretaceous, Alberta: Dowling, 327.
Pilgrim limestone, Cambrian, Montana: Knopf, 626.
Pine Creek limestone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Pittsburg limestone, Carboniferous, Ohio: Condit, 251.
Pittsburgh limestone, Carboniferous, West Virginia: Krebs and Teets, 640.
Pittsburgh red shale, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Pittsburgh sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Pittsburgh (lower) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Pittsburgh (lower) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Pittsburgh (upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Pittsford shale, Silurian, New York: Grabau, 427.
Pocono formation, Mississippian, Pennsylvania: Campbell *et al.*, 169.
Pocono sandstone, Mississippian, Appalachian region: Barrell, 45.
Pocono series, Mississippian, West Virginia: Hennen and Reger, 479.
Point Edward formation, Carboniferous (Pennsylvanian), Nova Scotia: Hyde, 543.
Pomeroy quartz monzonite, Colorado: Crawford, 266.
Pomeroy sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Ponca sandstone, Cretaceous, Iowa: Keyes, 609.
Pontiac group, pre-Cambrian, Quebec: Bancroft, 36.
Poquag quartzite, pre-Cambrian, New York: Kemp, 588.
Porcupine Hill beds, Cretaceous, Alberta: Malcolm, 741.
Portage formation, Devonian, New York: Barrell, 45.
Portersville horizon, Carboniferous, Ohio: Condit, 251.
Portersville limestone or shale, Carboniferous, Ohio: Mark, 747.
Potomac group, Cretaceous, Virginia: Sanford, 1004.
Potsdam sandstone, Cambrian, Quebec: Raymond, 952.
Pottsville formation, Pennsylvanian, Illinois: Shaw and Savage, 1042.

Pottsville formation, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
Pottsville series, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Pottsville (upper), Carboniferous, West Virginia: Krebs and Teets, 640.
Pre-Wisconsin drift, Quaternary, New York: Kindle and Taylor, 619.
Price sandstone, Carboniferous, Mississippian, Virginia: Stose, 1127.
Prichard quartzite, Algonkian, Montana: Emmons and Calkins, 360.
Priest River terrane, Idaho, Washington, British Columbia: Daly, 278.
Prince Rupert formation, upper Paleozoic?, British Columbia: McConnell, 719.
Princeton batholith, Colorado: Crawford, 266.
Princeton quartz monzonite, Colorado: Crawford, 266.
Proctor sandstones, Carboniferous, West Virginia: Hennen and Reger, 479.
Protection formation, Cretaceous (Upper), British Columbia: Clapp, 199.
Prout limestone, Devonian, Ohio: Prosser, 932.
Purcell lava, Cambrian?, British Columbia: Schofield, 1020.
Purcell lava formation, Montana and British Columbia: Daly, 278.
Purcell series, Idaho, Montana, and British Columbia: Daly, 278.
Purcell sills, Cambrian?, British Columbia: Schofield, 1020.
Puyallup epoch (interglacial), Pleistocene, Washington: Bretz, 101.
Puyallup interglacial deposits, Pleistocene, British Columbia: Clapp, 199.
Quadrant formation, Pennsylvanian, Montana: Emmons and Calkins, 360; Pardee, 880.
Quadrant quartzite, Carboniferous, Montana: Knopf, 626.
Quartermaster formation, Permian, Oklahoma: Snider, 1078.
Quebec City formation, Ordovician, Quebec: Raymond, 951.
Queen Charlotte Islands formation, Cretaceous, British Columbia: Drysdale, 331.
Queenston formation, Ordovician, New York and Ontario: Schuchert, 1023.
Queenston member, Ontario: Parks, 888.
Queenston shale, Ordovician or Silurian, New York: Kindle and Taylor, 619.
Queenston shales, New York: Grabau, 427.
Quoddy shale, Silurian, Maine: Bastin and Williams, 56; Williams, 1289.
Rapid formation, Devonian, Iowa: Keyes, 610.
Ramsay Lake quartzite, pre-Cambrian, Ontario: Coleman, 237.
Raritan formation, Cretaceous, Delaware: Matson, 766.
Raton formation, Eocene, Colorado and New Mexico: Knowlton, 632; Lee, 671.
Ravalli formation, Algonkian, Montana: Emmons and Calkins, 360.
Rawhide formation, Carboniferous?, British Columbia: LeRoy, 680.
Rawhide formation, Carboniferous and post-Carboniferous, British Columbia: LeRoy, 680.
Reade formation, Mississippian, Utah: Hintze, 507.
Red Head formation, Carboniferous, New Brunswick: Young, 1347.
Red Lion formation, Cambrian, Montana: Billingsley, 75; Emmons and Calkins, 360.
Redstone limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Redwall limestone, Mississippian, Arizona: Robinson, 987.
Red Warrior limestone, Silurian? and Devonian?, Utah: Butler, 147.
Remmel batholith, Jurassic, Washington, British Columbia: Daly, 278.
Rensselaer grit, Devonian, New York, Massachusetts: Barrell, 45.
Rex chert member, Permian(?), Idaho: Schultz and Richards, 1030.
Richmond, Ordovician, Ontario: Foerste, 378.
Richmond formation, Ordovician, Ontario: Parks, 889, 890.
Richmond group, Ordovician, Quebec, Ontario: Raymond, 952.
Richter Mountain hornblendite, Carboniferous?, Washington, British Columbia: Daly, 278.
Ridgely sandstone member, Devonian, Maryland: Swartz *et al.*, 1138.
Ripple formation, Cambrian, Idaho and British Columbia: Daly, 278.
Riverdale formation, Nova Scotia: Hyde, 543.
Riverside sands, Tertiary, Iowa: Keyes, 611.
Robson limestones, Ordovician, British Columbia and Alberta: Walcott, 1225.
Rochester shale, Silurian, New York and Ontario: Schuchert, 1023.
Rochester shale, Silurian, Ontario: Parks, 887, 888.
Rochester shale member, Silurian, New York: Kindle and Taylor, 619.
Rock Creek chonolith, Jurassic, Washington, British Columbia: Daly, 278.
"Rockwood" formation, Silurian, Tennessee: Burchard, 135.
Rocky Mountain quartzite, Pennsylvanian, Alberta: Allan, 13; Shimer, 1145.
Romney formation, Devonian, Maryland: Prosser *et al.*, 937.
Roosville formation, Cambrian?, British Columbia: Schofield, 1020.
Roosville formation, Montana and British Columbia: Daly, 278.
Ross quartzite, pre-Cambrian, British Columbia: Daly, 279.

Ross Brook formation, Silurian, Nova Scotia: Twenhofel, 1172.
Rossland alkali granite, Tertiary, British Columbia: LeRoy, 680.
Rossland group, Carboniferous and post-Carboniferous, British Columbia: LeRoy, 680.
Rossland monzonite, Washington, British Columbia: Daly, 278.
Rossland volcanic group, Washington, British Columbia: Daly, 278.
Rossland Mountain group, Washington, British Columbia: Daly, 278.
Round Knob horizon, Carboniferous, Ohio: Condit, 251.
Rush Run sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Rykert granite batholith, Jurassic?, Washington, Idaho, British Columbia: Daly, 278.
Saanich formation, Pleistocene, Washington and British Columbia: Arnold and Hannibal, 18.
Saanich granodiorite, Mesozoic, British Columbia: Clapp, 199.
Saginaw coal series, Carboniferous, Michigan: Gregory, 442.
St. Alban beds, Devonian, Quebec: Clarke: 213.
St. Charles limestone, Cambrian, Utah: Richardson, 975.
St. Cloud sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
St. John group, Cambrian and Ordovician, New Brunswick: Young, 1347.
St. Mary River beds, Cretaceous, Alberta: Malcolm, 741.
St. Mary River series, Cretaceous or Tertiary?, Alberta: Dowling, 327.
St. Mary's formation, Miocene, Virginia: Sanford, 1004.
St. Piran formation, Cambrian (Lower), Alberta, British Columbia: Allan, 13.
Salina beds, Silurian, Ontario: Stauffer, 1102.
Salina deposits, Silurian, New York, Michigan: Grabau, 427.
Salina formation, Silurian, New York: Kindle and Taylor, 619.
Salina formation, Silurian, Ontario: Parks, 887.
Salmon Arm schist member, pre-Cambrian, British Columbia: Daly, 279.
Salmon River sandstone, Ordovician, New York: Grabau, 427.
Saltsburg sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Saltsburg sandstone member, Pennsylvanian, Pennsylvania: Campbell *et al.*, 169.
San Felipe series, Cretaceous, Mexico: White, 1275.
Sangamon soil, Quaternary, Illinois: Shaw and Savage, 1042.
Sangamon soil and loess, Quaternary: Deeley, 304.
San Lorenzo formation, Oligocene, Washington: Arnold and Hannibal, 18.
San Pablo formation, California: Clark, 207.
Santa Fe marls, Tertiary, New Mexico: Henderson, 478.
Saverton shales, Carboniferous, Missouri, Iowa: Keyes, 604.
Sawatch quartzite, Cambrian, Colorado: Crawford, 266.
Sawback formation, Devonian, Alberta: Allan, 13.
Scarboro beds, Pleistocene, Ontario: Coleman, 234, 236.
Scotland beds, Tertiary?, Barbados: Cunningham-Craig, 270.
Seattle formation, Oligocene, Washington and Oregon: Arnold and Hannibal, 18.
Seine series, pre-Cambrian, Ontario: Uglow, 1183.
Selkirk series, Cambrian?, British Columbia: LeRoy, 680.
Selkirk series, pre-Cambrian, British Columbia: Daly, 279.
Senecan group, Devonian, New York, Pennsylvania: Barrell, 45.
Sequatchie formation, Silurian, Appalachian Valley: Ulrich, 1187.
Sergeant shales, Cretaceous, Iowa: Keyes, 609.
Sespe formation, Tertiary, California: Louderback, 703.
Sevier shales, Ordovician, Tennessee: Grabau, 427.
Sewickley limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Sewickley (lower) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Sewickley (upper) sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Sexton Creek (Brassfield) limestone, Silurian, Illinois and Missouri: Savage, 1007, 1008.
Seymour formation, Pleistocene, Texas: Gordon, 416.
Sharon conglomerate, Carboniferous, West Virginia: Hennen and Reger, 479.
Shawangunk conglomerate, Silurian, New York, Pennsylvania: Grabau, 427.
Sheppard formation, pre-Devonian, Montana and British Columbia: Daly, 278.
Sheppard granite, Eocene?: Daly, 278.
Sherbrooke formation, Cambrian (Upper), British Columbia: Allan, 13.
Shinarump clay, Triassic, Utah: Lawson, 663.
Shinarump conglomerate, Triassic, Arizona, Utah, Colorado, New Mexico: Gregory, 446.
Shinarump conglomerate, Triassic, Utah: Lawson, 663.
Shinarump group, Triassic, Utah: Lawson, 663.

Shinarump group, Triassic and Permian, Arizona: Robinson, 987.
Shoal River marl member, Oligocene, Florida: Matson and Sanford, 768.
Shriver chert member, Devonian, Maryland: Swartz *et al.*, 1138.
Shulie formation, Carboniferous, Nova Scotia: Bell, 64.
Shuswap series, pre-Cambrian, British Columbia: Daly, 279; LeRoy, 680.
Sicamous limestone, pre-Cambrian, British Columbia: Daly, 279.
Siestan formation, Tertiary, California: Merriam, 792.
Sillery formation, Cambrian or Ordovician, Quebec: Young, 1347.
Silury formation, Ordovician, Quebec: Raymond, 951.
Silver Hill formation, Cambrian, Montana: Billingsley, 75; Emmons and Calkins, 360.
Similkameen batholith, Tertiary, Washington, British Columbia: Daly, 278.
Sir Donald formation, Cambrian, British Columbia: Daly, 279.
Siyeh formation, Cambrian?, British Columbia: Schofield, 1020.
Siyeh formation, Cambrian, Montana and British Columbia: Daly, 278.
Skagit harzburgite, Oligocene?, Washington, British Columbia: Daly, 278.
Skagit volcanic formation, Oligocene?, Washington, British Columbia: Daly, 278.
Skeena formation, Cretaceous, British Columbia: McConnell, 719.
Skelley limestone, Carboniferous, Ohio: Condit, 251; Mark, 747.
Skunnemunk conglomerate, Devonian, New Jersey, New York: Barrell, 45.
Slesse diorite, Miocene?, Washington, British Columbia: Daly, 278.
Slocan series, Carboniferous?, British Columbia: LeRoy, 680.
Smelter granite stock, Jurassic, Washington, British Columbia: Daly, 278.
Smoky River shales, Cretaceous, Alberta: Malcolm, 741.
Smoky River shales, Cretaceous, British Columbia: Galloway, 394.
Snyder shales, Devonian, Missouri, Iowa: Keyes, 604.
Sodus shale, Silurian, New York: Grabau, 427.
Sodus shale member, Silurian, New York: Kindle and Taylor, 619.
Soledad beds, Cretaceous, Mexico: Haarman, 453.
Solon formation, Devonian, Iowa: Keyes, 610.
Sooke formation, Oligocene, Washington and British Columbia: Arnold and Hannibal, 18.
Spence shale member, Cambrian, Utah: Richardson, 975.
Spence's Bridge volcanic group, Jurassic-Cretaceous, British Columbia: Drysdale, 331.
Spokane formation, Algonkian, Montana: Emmons and Calkins, 360.
Spokane shale, Algonkian, Montana: Knopf, 626.
Spokane shale, pre-Cambrian, Montana: Billingsley, 75.
Springvale sandstone, Devonian, Ontario: Stauffer, 1102, 1103.
Steeprock series, pre-Cambrian, Ontario: Uglow, 1183.
Stephen formation, Cambrian (Middle), Alberta, British Columbia: Allan, 13.
Stockton (Norristown) sandstone, Trias, Pennsylvania: Wherry, 1266.
Stonehouse formation, Silurian, Nova Scotia: Twenhofel, 1172.
Stony Mountain formation, Ordovician, Manitoba: Dowling, 326; Malcolm, 741; Wallace, 1230.
Strawn formation, Carboniferous, Texas: Gordon, 416.
Sudbury norite, pre-Cambrian, Ontario: Collins, 247; Miller, 820.
Sudbury series, pre-Cambrian, Ontario: Coleman, 231, 237; Collins, 247.
Sumas granite and diorite, Jurassic?, Washington, British Columbia: Daly, 278.
Summerfield limestone, Carboniferous, Ohio: Condit, 251.
Summit series, Cambrian and pre-Cambrian, Idaho and British Columbia: Daly, 278.
Sundance formation, Colorado: Butters, 153.
Sunderland formation, Pleistocene, Virginia: Sanford, 1004.
Supai formation, Pennsylvanian, Arizona: Robinson, 987.
Sutton formation, Jurassic and Triassic?, British Columbia: Clapp, 199.
Swan Peak quartzite, Ordovician, Utah: Richardson, 975.
Swift Water series, New Hampshire: Lahee, 644.
Sylvania sandrock, Silurian, Ontario: Parks, 890.
Sylvania sandstone, Silurian, Ontario: Parks, 886, 887, 890.
Tah formation, Cambrian, British Columbia and Alberta: Walcott, 1225.
Taku group, Devonian (?), British Columbia: Cairnes, 158.
Talbot formation, Pleistocene, Virginia: Sanford, 1004.
Talisman quartzite, Carboniferous (Pennsylvanian?), Utah: Butler, 147.
Tamasopa limestone, Cretaceous, Mexico: White, 1275.
Tamihy series, Cretaceous?, Washington, British Columbia: Daly, 278.
Tampa formation, Oligocene, Florida: Matson and Sanford, 768; Sellards and Gunter, 1038.

Tantalus conglomerate, Jura-Cretaceous, British Columbia: Cairnes, 158.

Tar sands, Cretaceous, Alberta: Malcolm, 741.

Tatalina group, Ordovician?, Alaska: Prindle, 929.

Tatay limestones, Cambrian, British Columbia and Alberta: Walcott, 1225.

Taylor sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.

Tejon formation, Eocene, California: Dickerson, 314.

Tejon series, Eocene, Oregon and Washington: Arnold and Hannibal, 18.

Tellico sandstone, Ordovician, Tennessee: Burchard, 135.

Temiskaming. *See* Timiskaming.

Tensleep sandstone, Pennsylvanian, Wyoming: Blackwelder, 76.

Thaynes limestone, Triassic, Idaho: Schultz and Richards, 1030.

Theresa formation, Ordovician, Quebec, Ontario: Raymond, 952.

Thetford series, pre-Cambrian?, Quebec: Harvie, 466.

Thornton fire clay, Carboniferous, West Virginia: Hennen and Reger, 479.

Thorold quartzite, Silurian, New York, Ontario: Grabau, 427.

Thorold sandstone, Silurian, New York: Kindle and Taylor, 619.

Threeforks limestone, Devonian, Utah: Richardson, 975.

Threeforks shale, Devonian, Montana: Knopf, 626.

Tigaraha schist, Paleozoic, Alaska: Moffit, 827.

Timiskaming series, pre-Cambrian, Ontario: Burrows, 144; Coleman, 231; Collins, 247; Miller, 815, 817, 820.

Titkana limestones, Cambrian, British Columbia and Alberta: Walcott, 1225.

Tomichi limestone, Ordovician, Colorado: Crawford, 266.

Tonkawatla formation, pre-Cambrian, British Columbia: Daly, 279.

Tonzona group, Devonian and Silurian?, Alaska: Prindle, 929.

Topache limestone, Carboniferous (Mississippian?), Utah: Butler, 147.

Topatopa formation, Tertiary, California: Louderback, 703.

Toronto formation, Pleistocene, Ontario: Coleman, 234, 236.

Totsen series, Silurian, Alaska: Maddren, 739.

Tranquille beds, Miocene?, British Columbia: Drysdale, 331.

Trenton, Ordovician, Ontario and Quebec: Raymond, 958.

Trenton formation, Ordovician, New York *et al.*: Grabau, 427.

Trenton formation, Ordovician, Ontario: Parks, 890.

Trenton formation, Ordovician, Quebec: Raymond, 951.

Trenton group, Ordovician, Quebec, Ontario: Raymond, 952.

Trenton (Curdsville), Ordovician, Ontario: Foerste, 378.

Trout Lake conglomerate, pre-Cambrian, Ontario: Coleman, 231, 237.

Tshinakin formation, pre-Cambrian, British Columbia: Daly, 279.

Tulameen group, Triassic?, British Columbia: Camsell, 170.

Tuscaloosa formation, Cretaceous, Alabama: Berry, 731.

Tuscarora quartzite, Silurian, Pennsylvania: Grabau, 427.

Tusquitee quartzite, Cambrian, North Carolina, Georgia: La Forge and Phalen, 643.

Twin Creek limestone, Jurassic, Idaho: Schultz and Richards, 1030.

Twin River formation, Oligocene, Washington: Arnold and Hannibal, 18.

Uffington shale, Carboniferous, West Virginia: Hennen and Reger, 479.

Union formation, Nova Scotia: Hyde, 543.

Uniontown limestone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.

Uniontown sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.

Ute limestone, Cambrian, Utah: Richardson, 975.

Ute limestone, Mississippian, Utah: Loughlin, 706.

Ute limestone, Silurian, Utah: Hintze, 507.

Utica formation, Ordovician, Ontario: Parks, 890.

Utica formation, Ordovician, Quebec: Raymond, 951.

Utica formation, Ordovician, Quebec, Ontario: Raymond, 952.

Utica group, Ordovician, Quebec, Ontario: Raymond, 952.

Utica shale, Ordovician, New York *et al.*: Grabau, 427.

Valdes group, Triassic(?), British Columbia: Bancroft, 35.

Valdez group, Paleozoic, Alaska: Capps and Johnson, 178.

Valhalla granite, Tertiary, British Columbia: LeRoy, 680.

Valleytown formation, Cambrian, Georgia: La Forge and Phalen, 643.

Vancouver group, Jurassic and Triassic?, British Columbia: Clapp, 199.

Vancouver series, Carboniferous and Triassic(?), Vancouver Island, B. C.: Arnold and Hannibal, 18.

Vanport (ferriferous) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.

Vaqueros formation, Tertiary, California: Louderback, 703.

Vashon drift, Pleistocene, British Columbia: Clapp, 199.

Vashon epoch (glacial), Pleistocene, Washington: Bretz, 101.
Vedder greenstone, Carboniferous, Washington, British Columbia: Daly, 278.
Vermejo formation, Cretaceous, Colorado and New Mexico; Knowlton, 632.
Vermejo formation, Tertiary, Colorado and New Mexico: Lee, 671.
Vermilion Cliff sandstone, Triassic, Utah: Lawson, 663.
Vernon shale, Silurian, New York: Grabau, 427.
Vicksburg group, Oligocene, Florida: Matson and Sanford, 768; Sellards and Gunter, 1038.
Wapiabi shales, Cretaceous, Alberta: Malcolm, 741.
Wapiti River sandstone, Cretaceous, Alberta: Malcolm, 741.
Wapiti River sandstones, Cretaceous, British Columbia: Galloway, 394.
Wardner formation, Mississippian, British Columbia: Schofield, 1020.
Wark gneiss, Mesozoic, British Columbia: Clapp, 199.
Wasatch formation, Tertiary, Colorado: Woodruff, 1325.
Wasatch limestone, Utah: Hintze, 507.
Washington fire clay shale, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Washington sandstone, Carboniferous, West Virginia: Hennen and Reger, 479.
Washington (lower) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Washington (upper) limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Waterton formation, pre-Devonian, Montana and British Columbia: Daly, 278.
Waynesburg limestone, Carboniferous, West Virginia: Hennen and Reger, 479.
Waynesburg sandstone, Carboniferous, West Virginia: Hennen and Reger, 479; Krebs and Teets, 640.
Weber quartzite, Pennsylvanian, Utah: Hintze, 507.
Wells formation, Pennsylvanian, Idaho: Schultz and Richards, 1030.
Wells formation, Pennsylvanian, Utah: Richardson, 975.
Wheaton River volcanics, Tertiary or Pleistocene, British Columbia: Cairnes, 158.
Whirlpool quartzite, Silurian, New York: Grabau, 427.
Whirlpool sandstone, New York and Ontario: Taylor, 1149.
Whirlpool sandstone member, Silurian, New York: Kindle and Taylor, 619.
Whitehorse sandstone member, Permian, Oklahoma: Snider, 1078.
White River beds, Tertiary, North Dakota: Leonard, 678.
White River formation, Oligocene, South Dakota: Winchester, 1313.
Whitewater series, pre-Cambrian, Ontario: Collins, 247.
Wichita formation, Permian, Texas, Gordon, 416.
Wicomico formation, Pleistocene, Virginia: Sanford, 1004.
Wigwam formation, Cambrian, Montana and British Columbia: Daly, 278.
Willow Creek beds, Cretaceous, Alberta: Malcolm, 741.
Windsor series, Carboniferous, Nova Scotia: Bell, 64.
Windsor series, Mississippian, Nova Scotia: Hyde, 543.
Winifrede (lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Winifrede (upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 640.
Winnipeg sandstone, Ordovician, Manitoba: Malcolm, 741; Wallace, 1230.
Winnipegosan, Devonian, Manitoba: Dowling, 326; Malcolm, 741.
Winnipegosan dolomite, Devonian, Manitoba: MacLean, 736.
Wisconsin drift, Quaternary: Deeley, 304.
Wisconsin stage, Quaternary, New York: Kindle and Taylor, 619.
Wolcott limestone member, Silurian, New York: Kindle and Taylor, 619.
Wolf formation, pre-Cambrian, Idaho and British Columbia: Daly, 278.
Wolsey shale, Cambrian, Montana: Knopf, 626.
Woodbury shales, Cretaceous, Iowa: Keyes, 609.
Woodmont shale, Devonian, Maryland: Swartz, 1137.
Woodside shale, Triassic, Idaho: Schultz and Richards, 1030.
Woodward formation, Permian, Oklahoma: Snider, 1078.
Worm Creek quartzite member, Cambrian, Utah: Richardson, 975.
Yakima basalt, Miocene, Washington: Waring, 1232.
Yakinikak limestone, Mississippian, Montana: Daly, 278.
Yarmouth (?) soil, Quaternary, Illinois: Shaw and Savage, 1042.
Yarmouth soil and loess, Quaternary: Deeley, 304.
Yogo limestone, Cambrian, Montana: Knopf, 626.
Yonkers gneiss, pre-Cambrian, New York: Kemp, 588.
Yorktown formation, Miocene, Virginia: Sanford, 1004.