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BIBLIOGRAPHY
OF
NORTH AMERICAN GEOLOGY

FOR

1916

WITH SUBJECT INDEX

BY

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By JOHN M. NICKLES.

INTRODUCTION.

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the year 1916 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.

The bibliography of North American geology is comprised in the following bulletins of the United States Geological Survey: No. 127 (1732-1892); Nos. 188 and 189 (1892-1900); No. 301 (1901-1905); No. 372 (1906-7); No. 409 (1908); No. 444 (1909); No. 495 (1910); No. 524 (1911); No. 545 (1912); No. 584 (1913); No. 617 (1914); No. 645 (1915); and No. 665 (1916).



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- Covington County, pp. 797-829.
- California, Fresno area, pp. 2089-2166.
- Connecticut, New London County, pp. 31-55.
- Florida, Ocala area, pp. 669-724.
- Georgia, Ben Hill County, pp. 495-517.
- Chattoga County, pp. 519-571.
- Dougherty County, pp. 573-631.
- Tattnall County, pp. 655-668.
- Troup County, pp. 633-653.
- Illinois, Will County, pp. 1521-1553.
- Indiana, Boone County, pp. 1409-1443.
- Hamilton County, pp. 1445-1472.
- Montgomery County, pp. 1473-1494.
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- Michigan, Genesee County, pp. 1373-1407.
- Missouri, Barton County, pp. 1609-1632.
- Carroll County, pp. 1633-1662.
- Cass County, pp. 1663-1686.
- Miller County, pp. 1687-1710.
- Pike County, pp. 1711-1750.
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- Mississippi, Lafayette County, pp. 831-854.
- Lincoln County, pp. 855-879.
- Warren County, pp. 881-926.
- Winston County, pp. 927-967.
- Nebraska, Otoe County, pp. 1893-1919.
- New Mexico, Middle Rio Grande Valley area, pp. 1965-2010.
- New Mexico-Texas, Mesilla Valley, pp. 2011-2045.
- New York, Orange County, pp. 57-108.
- North Carolina, Ashe County, pp. 341-368.
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- Oregon-Washington, Hood River-White Salmon River area, pp. 2047-2087.
- Pennsylvania, Lehigh County, pp. 109-153.
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- York County, pp. 155-245.
- South Carolina, Barnwell County, pp. 411-455.
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- Escambia County, pp. 827-873.
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- Arkansas, Ashley County, pp. 1185-1219.
- Pope County, pp. 1221-1267.
- California, Sacramento Valley, pp. 2297-2438.
- Florida, Bradford County, pp. 643-674.
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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 alphabetized 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; Ganalster; 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.

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Mollusca; Cephalopoda; Gastropoda; Pelecypoda.

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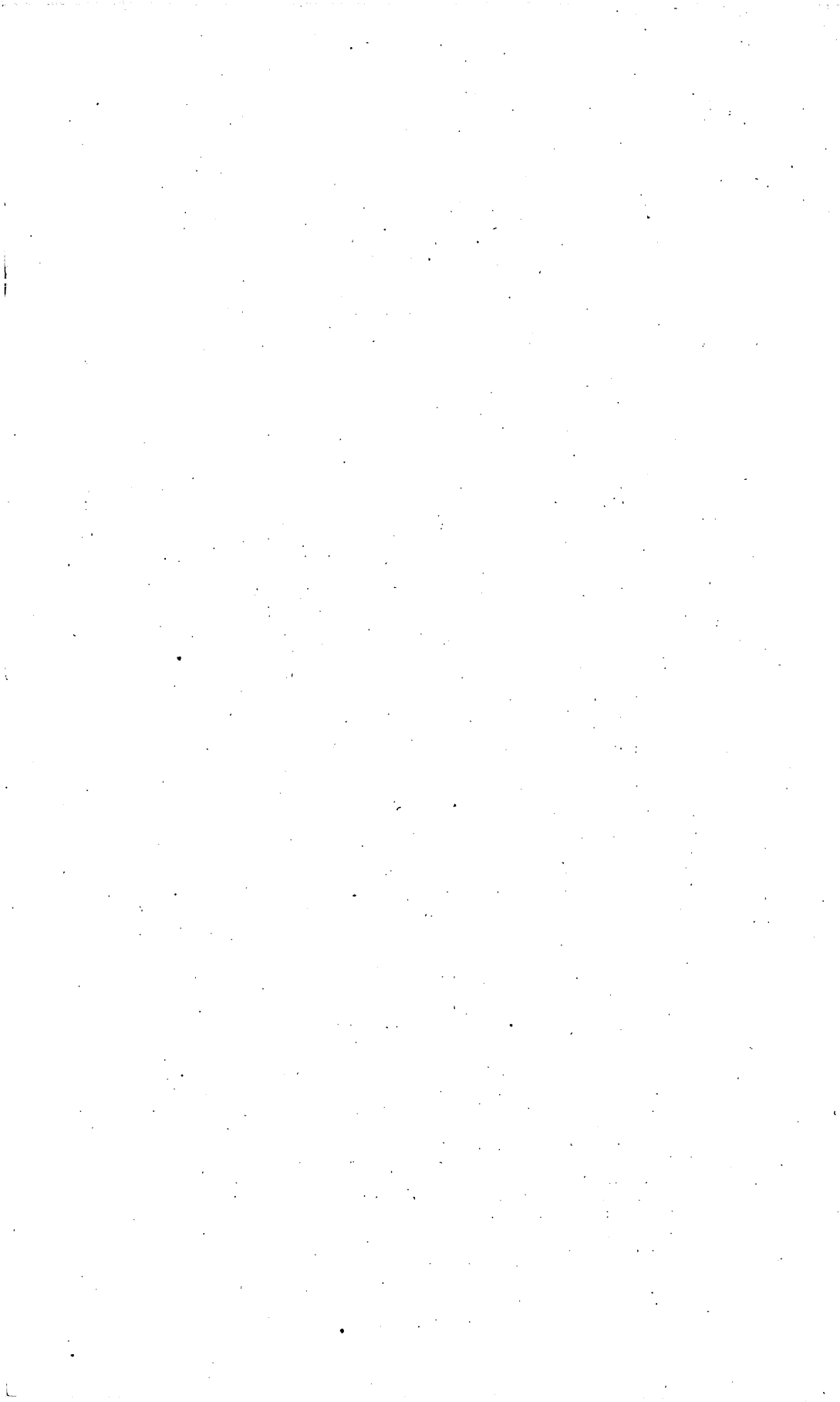
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- Boone limestone, Mississippian, Arkansas: Purdue and Miser, 879.
- Boquillas flags, Cretaceous, Texas: Udden *et al.*, 1107.
- Bossardville limestone, Silurian, West Virginia: Grimsley, 416.
- Bowling Green limestone, Silurian, Missouri: Rowley, 926.
- Bozeman formation, Tertiary, Montana: Haynes, 440.
- Braddyville beds, Carboniferous, Iowa: Smith, 1009, 1010.
- Brassfield limestone, Silurian, Ohio, and Indiana: Prosser, 870.
- Brazer limestone, Carboniferous, Wyoming: Mansfield, 694.
- Brentwood limestone member, Pennsylvanian, Arkansas: Purdue and Miser, 879.
- Brewster formation, Cambrian, Texas: Udden *et al.*, 1107.
- Bridge River series, Devonian-Carboniferous, British Columbia: Drysdale, 316.
- Bright Angel shale, Cambrian, Arizona: Ransome, 881.
- Brookville terrane, Cretaceous, Kansas: Keyes, 565.
- Brownstown marl, Cretaceous, Louisiana: Matson, 711.
- Brownstown marl, Cretaceous, Texas: Udden *et al.*, 1107.
- Brownstown sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Bruce series, Huronian, Ontario: Collins, 220.
- Bruce series, pre-Cambrian, Great Lakes region: Lawson, 620.
- Brush Creek limestone and shale, Pennsylvanian, West Virginia: Reger, 892.
- Bryant terrane, Ordovician, Missouri: Keyes, 565.
- Buchanan gravel, Pleistocene, Iowa: Leighton, 626.
- Buckingham series, pre-Cambrian, Quebec: Wilson, 1243.
- Buda limestone, Cretaceous, Texas: Udden *et al.*, 1107.
- Buffalo sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Buffalo terrane, Ordovician, Missouri: Keyes, 565.
- Bulkley formation, Cretaceous, British Columbia: MacKenzie, 680.
- Burro terrane, Cambrian, New Mexico: Keyes, 565.
- Caballos novaculite, Devonian (?), Texas: Udden *et al.*, 1107.
- Cache Creek group, Devonian-Carboniferous, British Columbia: Drysdale, 316.
- Cadwallador diorite, Jura-Triassic (?), British Columbia: Drysdale, 316.
- Cadwallador series, Jura-Triassic (?), British Columbia: Drysdale, 316.
- Calmito formation, Oligocene, Canal Zone: MacDonald, 671.
- Calvert formation, Tertiary, Maryland: Berry, 66.
- Campa Grande formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Cambridge limestone, Carboniferous, Ohio: Condit, 223.
- Campbell Creek limestone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Canadian series, Ordovician, Missouri: Keyes, 565.
- Canajoharie (Trenton) shale, Ordovician, New York: Miller, 766.
- Cannonball marine member, Tertiary, South Dakota: Winchester *et al.*, 1248.
- Canyon formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Canyon Largo terrane, Tertiary, New Mexico: Keyes, 565.
- Cape Blanco beds, Miocene, Oregon: Martin, 704.
- Capitan limestone, Permian, Texas: Udden *et al.*, 1107.
- Capitan terrane, Carboniferous, New Mexico: Keyes, 565.
- "Capitol Creek shale," Cambrian, Montana: Walcott, 1146.
- Cap Mountain formation, Cambrian, Texas: Udden *et al.*, 1107.
- Capping quartzite, Cambrian, Arizona: Bonillas *et al.*, 90.
- Carbondale formation, Pennsylvanian, Illinois: Cady, 156; Rich, 900; Savage, 940; Young, 1272.
- Cardiff shale, Devonian, New York: Smith, 1008.
- Caribbean limestone, Pleistocene or Pliocene, Canal Zone, MacDonald, 671.
- Carlile shale, Cretaceous, Colorado: Finlay, 357.
- Carlinville limestone, Pennsylvanian, Illinois: Cady, 156; Young, 1272.

- Carrasco terrane, Cambrian, New Mexico: Keyes, 565.
- Carrizo formation, Eocene, Texas: Udden *et al.*, 1107.
- Carrizo formation, pre-Cambrian, Texas: Udden *et al.*, 1107.
- Cason shale, Ordovician, Arkansas: Purdue and Miser, 879.
- Casper formation, Carboniferous, Wyoming: Darton, 259.
- Castile gypsum, Permian, Texas: Udden *et al.*, 1107.
- Catahoula sandstone, Tertiary, Gulf States: Matson, 714.
- Catahoula sandstone, Tertiary, Mississippi: Hopkins, 483.
- Catoctin schist, pre-Cambrian, West Virginia: Grimsley, 416.
- Catskill formation, Devonian, West Virginia: Grimsley, 416.
- Cawker terrane, Cretaceous, Kansas: Keyes, 565.
- Cayugan series, Silurian, New York: Schuchert, 961.
- Cedar Grove (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Cedar Grove (Middle) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Cedar Grove (Upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Cedarville dolomite, Silurian, Ohio: Prosser, 869, 870.
- Cedarville sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Cenocene series, Quaternary, New Mexico: Keyes, 565.
- Chaco terrane, Tertiary, New Mexico: Keyes, 565.
- Chacra terrane, Cretaceous, New Mexico: Keyes, 565.
- Chaman series, Tertiary, New Mexico: Keyes, 565.
- Chambersburg limestone, Ordovician, West Virginia: Grimsley, 416.
- Chambly member, Ordovician, Quebec: Foerste, 365.
- Champlain or Leda clays, Pleistocene, Canada: Johnston, 533.
- Chanac formation, Tertiary, California: Buwalda, 153.
- Chapman sandstone, Devonian, Maine: Williams, 1226.
- Chaquaqua terrane, Jurassic, Kansas: Keyes, 565.
- Chaquaqua terrane, Jurassic, New Mexico: Keyes, 565.
- Charlton formation, Pliocene, Georgia: Brantly, 105.
- Chattahoochee formation, Oligocene, Georgia: Brantly, 105.
- Chattahoochee formation, Tertiary, Alabama, Florida:
- Chattanooga shale, Devonian, Arkansas: Purdue and Miser, 879.
- Chaves terrane, Carboniferous, New Mexico: Keyes, 565.
- Chester group, Mississippian, Illinois: Rich, 900.
- Chetang formation, Cambrian, Alberta: Burling, 133.
- Chemung formation, Devonian, West Virginia: Grimsley, 416.
- Chemungan series, Devonian, Missouri: Keyes, 565.
- Cheyenne terrane, Cretaceous, Kansas: Keyes, 565.
- Chickles formation, Cambrian, Pennsylvania: Bliss and Jonas, 88.
- Chico group, Cretaceous, California: Packard, 820.
- Chico formation, Cretaceous, Washington: Weaver, 1176.
- Chilton (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Chilton (Upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Chilton (Upper) (?) or Cleveland sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Chinle formation, Triassic, Arizona and Utah: Gregory, 405.
- Chipola marl member, Tertiary, Florida: Berry, 65.
- Chiricahuan series, Cambrian, New Mexico: Keyes, 565.
- Chisholm shales, Cambrian, Nevada: Walcott, 1147.
- Chisos beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Chitstone limestone, Triassic, Alaska: Martin, 705; Moffit, 769.
- Chloridian series, Cambrian, New Mexico: Keyes, 565.
- Choctawhatchee marl, Tertiary, Florida: Berry, 65; Mansfield, 701.
- Chouteau limestone, Carboniferous, Missouri: Keyes, 568.
- Chugwater formation, Triassic, Wyoming: Condit, 224; Hares, 424; Lupton and Condit, 662; Ziegler, 1275.
- Chugwater formation, Triassic(?), Wyoming: Darton, 259.
- Chuska sandstone, Tertiary, Arizona and New Mexico: Gregory, 405.
- Cibola beds, Permian, Texas: Udden *et al.*, 1107.
- Cibola terrane, Silurian, New Mexico: Keyes, 565.
- Cieneguita beds, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Cimarronian series, Carboniferous, Kansas: Keyes, 565.
- Cimarronian series, Carboniferous, New Mexico: Keyes, 565.
- Cincinnati shale, Ordovician, Wisconsin: Weidman and Schultz, 1181.
- Cintura limestone, Cretaceous, Arizona: Bonillas *et al.*, 90.
- Cisco formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Citronelle formation, Pliocene, Gulf Coastal Plain: Matson, 713, 714.

- City Bluffs shale, Carboniferous, Iowa : Smith, 1009, 1010.
- Claiborne formation, Cretaceous, Mississippi : Logan, 650.
- Claiborne formation, Tertiary, Arkansas : Stephenson and Crider, 1047.
- Claiborne granite, Eocene, Texas : Udden *et al.*, 1107.
- Claiborne group, Eocene, Georgia : Brantly, 105.
- Claiborne group, Tertiary, Mississippi : Hopkins, 483.
- Clallam formation, Miocene, Washington : Weaver, 1176.
- Clarendon beds, Miocene, Texas : Udden *et al.*, 1107.
- Clarion sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Clarksburg fire clay shale, Pennsylvanian, West Virginia : Reger, 892.
- Clarksburg red shale, Pennsylvanian, West Virginia : Reger, 892.
- Clarno formation, Eocene, Oregon : Collier, 218 ; Williams, 1229.
- Clayton limestone, Tertiary, Gulf States : Berry, 63.
- Clear Fork formation, Permian, Texas : Udden *et al.*, 1107.
- Cleveland sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Clifty limestone, Devonian, Arkansas : Purdue and Miser, 879.
- Clinton beds, Silurian, Wisconsin : Weldman and Schultz, 1181.
- Clinton formation, Silurian, Pennsylvania : Schuchert, 961.
- Clinton formation, Silurian, West Virginia : Grimsley, 416.
- Clinton limestone, Silurian, Indiana : Culbertson, 239.
- Cloverly formation, Cretaceous, Wyoming : Hintze, 468 ; Lupton, 659.
- Cloverly (?) sandstone, Cretaceous, Wyoming : Darton, 259.
- Clore formation, Mississippian, Illinois : Brokaw, 111.
- Coalburg (Lower) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602 ; Reger, 892.
- Coalburg (Upper) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602 ; Reger, 892.
- Cobalt series, Huronian, Ontario : Collins, 220.
- Cobalt series, pre-Cambrian, Great Lakes region : Lawson, 620.
- Cockfield formation, Eocene, Texas : Udden *et al.*, 1107.
- Coconino sandstone, Pennsylvanian, Arizona : Ransome, 881.
- Cody shale, Cretaceous, Wyoming : Lupton, 659.
- Coeymans member, Devonian, West Virginia : Grimsley, 416.
- Coffee sand member, Cretaceous, Tennessee : Berry, 74.
- Colebrooke schist, Oregon : Butler and Mitchell, 147.
- Colgate sandstone, Cretaceous or Tertiary, Montana : Rowe and Wilson, 925.
- Collazo shale, Tertiary, Porto Rico : Reeds, 891.
- Collingwood shales, Ordovician, Ontario : Foerste, 365.
- Coloradan series, Cretaceous, Kansas : Keyes, 565.
- Coloradan series, Cretaceous, New Mexico : Keyes, 565.
- Colorado granite, Cretaceous, Colorado : Finlay, 357.
- Colorado series, Cretaceous, Wyoming : Ziegler, 1275.
- Colorado shale, Cretaceous, Montana : Barnett, 38 ; Stebinger, 1041, 1042.
- Colorado shale, Cretaceous, New Mexico : Darton, 258 ; Paige, 824.
- Columbia deposits, Pleistocene, Texas : Udden *et al.*, 1107.
- Columbia River lava, Miocene, Oregon : Collier, 218.
- Comanchan series, Cretaceous, Kansas : Keyes, 565.
- Comanchan series, Cretaceous, Missouri : Keyes, 565.
- Comanchan series, Cretaceous, New Mexico : Keyes, 565.
- Comanche Peak formation, Cretaceous, Texas : Udden *et al.*, 1107.
- Conasauga formation, Cambrian, Alabama : Walcott, 1145.
- Conemaugh formation, Carboniferous, Ohio : Condit, 223.
- Conemaugh series, Pennsylvanian, West Virginia : Reger, 892.
- Connellsville sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Connellsville (Lower) sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Conococheague limestone, Cambrian, West Virginia : Grimsley, 416.
- Cook Mountain formation, Eocene, Texas : Udden *et al.*, 1107.
- Cook Mountain formation, Tertiary, Texas : Deussen and Dole, 289.
- Corniferous limestone, Devonian, Indiana : Culbertson, 239.
- Coronado quartzite, Cambrian (?), Arizona : Ransome, 881.
- Corrigan formation, Oligocene (?), Texas : Udden *et al.*, 1107.
- Corry sandstone, Pennsylvania : Verwiebe, 1137.
- Corryville member, Ordovician, Ohio : Braun, 107.
- Corryville shale member, Ordovician, Ohio : Fenneman, 352.
- Corsicana beds, Cretaceous, Texas : Udden *et al.*, 1107.
- Cotter dolomite, Ordovician, Arkansas : Purdue and Miser, 879.
- Cottonwood limestone, Carboniferous, Oklahoma : Heald, 441.

- Cox formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Coyota terrane, Carboniferous, New Mexico: Keyes, 565.
- Cranberry formation, Cretaceous, British Columbia: Clapp, 188.
- Creston red shale, Pennsylvanian, West Virginia: Reger, 892.
- Cripple Creek granite, pre-Cambrian, Colorado: Finlay, 357.
- Cristobal terrane, Ordovician, New Mexico: Keyes, 565.
- Croixan series, Cambrian, Missouri: Keyes, 565.
- Crouse limestone, Carboniferous, Oklahoma: Heald, 441.
- Crowleyan series, Tertiary, Missouri: Keyes, 565.
- Cucaracha formation, Oligocene, Canal Zone: MacDonald, 671.
- Culebra formation, Oligocene, Canal Zone: MacDonald, 671.
- Cussewago sandstone, Pennsylvania: Verwiebe, 1137.
- Cuyama formation, Tertiary, California: English, 344.
- Cynthiana formation, Ordovician, Kentucky: Fenneman, 352.
- Cypress formation, Mississippian, Illinois: Brokaw, 111.
- Cypress sandstone, Mississippian, Illinois and Kentucky: Ulrich, 1112; Weller, 1185.
- Cyrene member, Silurian, Missouri: Rowley, 926.
- Dakota group, Cretaceous, Wyoming: Ziegler, 1275.
- Dakota sandstone, Cretaceous, Arizona and New Mexico: Gregory, 405.
- Dakota sandstone, Cretaceous, Colorado: Finlay, 357.
- Dakota sandstone, Cretaceous, Utah: Lupton, 660.
- Dakota sandstone, Cretaceous, Wyoming: Hares, 424.
- Dakotan series, Cretaceous, Kansas: Keyes, 565.
- Dakotan series, Cretaceous, New Mexico: Keyes, 565.
- Davis terrane, Cambrian, Missouri: Keyes, 565.
- Dawson arkose, Tertiary, Colorado: Finlay, 357.
- Dayton limestone, Silurian, Ohio: Prosser, 870.
- De Chelly sandstone, Permian(?), Arizona: Gregory, 405.
- Decorah shale, Ordovician, Iowa: Howell, 492.
- Decorah shale, Ordovician, Iowa and Illinois: Shaw and Trowbridge, 982.
- Decorah shale, Ordovician, Minnesota: Sardeson, 937.
- Decota sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- De Courcy formation, Cretaceous, British Columbia: Clapp, 188.
- Delaware limestone, Devonian, Ohio: Stauffer, 1040.
- Delaware Mountain formation, Permian, Texas: Udden *et al.*, 1107.
- Del Rio clay, Cretaceous, Texas: Udden *et al.*, 1107.
- Denton subgroup, Cretaceous, Texas: Udden *et al.*, 1107.
- Departure Bay calcarenites, Cretaceous, British Columbia: Clapp, 188.
- Derby terrane, Cambrian, Missouri: Keyes, 565.
- Des Moines series, Carboniferous, Missouri: Keyes, 565.
- Detroit River series, Devonian, Michigan, Ohio and Ontario: Stauffer, 1038.
- DeWitt formation, Miocene-Pliocene, Texas: Udden *et al.*, 1107.
- Dexter sands, Cretaceous, Texas: Udden *et al.*, 1107.
- Dimple formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Dingess limestone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Dinwoody formation, Triassic, Wyoming: Condit, 224.
- Dinwoody formation, Triassic and Carboniferous(?), Wyoming: Lupton and Condit, 662.
- Dockum beds, Triassic, Texas: Udden *et al.*, 1107.
- Dockuman series, Triassic, Kansas: Keyes, 565.
- Dockuman series, Triassic, New Mexico: Keyes, 565.
- Doloresian series, Triassic, New Mexico: Keyes, 565.
- Dorothy limestone and shale, Carboniferous, West Virginia: Krebs and Teets, 602.
- Dothan formation, Jurassic, Oregon: Butler and Mitchell, 147.
- Double Mountain formation, Permian, Texas: Udden *et al.*, 1107.
- Douglas shale, Carboniferous, West Virginia: Krebs and Teets, 602.
- Dragoonan series, Cambrian, New Mexico: Keyes, 565.
- Draney limestone, Cretaceous(?), Idaho: Mansfield and Roundy, 698.
- Dresbach sandstone, Cambrian, Minnesota: Sardeson, 937.
- Dresbach sandstone, Cambrian, Wisconsin: Shipton, 994.
- Dripping Spring quartzite, Cambrian(?), Arizona: Ransome, 881.
- Dry Creek shale, Cambrian, Montana: Walcott, 1146.
- Duck Creek formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Duluth gabbro, Algonkian, Minnesota: Wolff, 1253.
- Dunkard series, Pennsylvanian, West Virginia: Reger, 892.
- Dunkard series, Permian, Ohio: Stauffer, 1039.
- Duplin marl, Miocene, Georgia: Brantly, 105.

- Eagle limestone and shale, Carboniferous, West Virginia: Krebs and Teets, 602.
- Eagle sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Eagle sandstone, Cretaceous, Montana: Calvert, 163; Stebinger, 1042.
- Eagle sandstone, Cretaceous, Wyoming: Hintze, 468.
- Eagle Ford clay, Cretaceous, Louisiana: Matson, 711.
- Eagle Ford clay, Cretaceous, Texas: Matson, 712.
- Eagle Ford formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Eagle Ford shale, Cretaceous, Texas: Udden *et al.*, 1107.
- East Lynn sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Easton schist, pre-Ordovician, Washington: Smith, 1022.
- East Wellington formation, Cretaceous, British Columbia: Clapp, 188.
- Eckman sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Economy member, Ordovician, Ohio: Braun, 107.
- Eddy terrane, Carboniferous, New Mexico: Keyes, 565.
- Eden formation, Ordovician, Ohio: Braun, 107.
- Eden group, Ordovician, Ohio: Fenneman, 352.
- Edgewood limestone, Silurian, Illinois: Savage, 944.
- Edgewood limestone, Silurian, Missouri: Rowley, 926.
- Edmonton formation, Cretaceous, Alberta: Sinclair, 1000; Slipper, 1006.
- Edwards limestone, Cretaceous, Texas: Udden *et al.*, 1107.
- Egypt terrane, Cretaceous, Missouri: Keyes, 565.
- Elbrook formation, Cambrian, West Virginia: Grimsley, 416.
- Eldorado granodiorite, Cretaceous, British Columbia: Drysdale, 316.
- Eldorado series, Cretaceous, British Columbia: Drysdale, 316.
- Elk Lick limestone, Pennsylvanian, West Virginia: Reger, 892.
- Elko limestone, Cambrian, Alberta: Burling, 133.
- Elk River beds, Pliocene-Pleistocene, Oregon: Martin, 704.
- Ellenburger limestone, Cambrian, Ordovician, Texas: Udden *et al.*, 1107.
- Ellis formation, Jurassic, Montana: Barnett, 38.
- Ellis formation, Jurassic, Montana: Haynes, 440.
- El Pasan series, Ordovician, New Mexico: Keyes, 565.
- El Paso limestone, Ordovician, New Mexico: Darton, 258; Paige, 824.
- El Paso limestone, Ordovician, Texas: Udden *et al.*, 1107.
- Embar formation, Carboniferous, Wyoming: Branson, 104.
- Embar formation, Carboniferous-Triassic, Wyoming: Hares, 424.
- Embar formation, Carboniferous and Triassic, Wyoming: Condit, 224.
- Embar formation, Triassic and Carboniferous, Wyoming: Lupton and Condit, 662.
- Embarrass granite, Algonkian, Minnesota: Wolff, 1253.
- Emperador limestone, Oligocene, Canal Zone: MacDonald, 671.
- Empire formation, Miocene, Oregon: Martin, 704.
- Empire shale, Algonkian, Montana: Walcott, 1146.
- Empire shale, pre-Cambrian, Montana: Haynes, 440.
- Ep-Agnotozoic interval, pre-Cambrian: Schuchert, 962.
- Ep-Archeozoic interval, pre-Cambrian: Schuchert, 962.
- Ephraim conglomerate, Cretaceous(?), Idaho: Mansfield and Roundy, 698.
- Epicene series, Quaternary, New Mexico: Keyes, 565.
- Epi-Proterozoic interval, pre-Cambrian: Schuchert, 962.
- Erian series, Devonian, Missouri: Keyes, 565.
- Erwin quartzite, Cambrian, Tennessee: Jenkins, 514.
- Escabrosa limestone, Mississippian, Arizona: Bonillas *et al.*, 90; Ransome, 881.
- Escondido formation, Cretaceous, Texas: Deussen and Dole, 289.
- Esmeralda formation, Tertiary, Nevada: Merriam, 737.
- Espanola limestone, pre-Cambrian, Ontario: Collins, 220.
- Etchegoin formation, Pliocene, California: Martin, 704.
- Etchegoin formation, Tertiary, California: Nomland, 795.
- Etheline formation, Tertiary, British Columbia: MacKenzie, 679.
- Eutaw formation, Cretaceous, Tennessee: Berry, 74.
- Eutaw sand, Cretaceous, Tennessee: Purdue, 877.
- Everton limestone, Ordovician, Arkansas: Purdue and Miser, 879.
- Extension formation, Cretaceous, British Columbia: Clapp, 188.
- Exter terrane, Jurassic, New Mexico: Keyes, 565.
- Fairhaven member, Tertiary, Maryland: Berry, 66.
- Fairmount limestone member, Ordovician, Ohio: Fenneman, 352.
- Fairmount member, Ordovician, Ohio: Braun, 107.
- Fairview formation, Ordovician, Ohio: Braun, 107; Fenneman, 352.
- Fayette formation, Eocene, Texas: Udden *et al.*, 1107.

- Fayette sandstone, Tertiary, Gulf States: Matson, 714.
- Fayette sandstone, Tertiary, Texas: Deussen and Dole, 289.
- Fayetteville shale, Mississippian, Arkansas: Purdue and Miser, 879.
- Fernie formation, Jurassic, Alberta: McLearn, 683.
- Fernie formation, Jurassic, British Columbia: MacKenzie, 678.
- Fernie shales, Jurassic, Alberta: Sinclair, 1000.
- Fernvale limestone, Ordovician, Arkansas: Purdue and Miser, 879.
- Ferron sandstone member, Cretaceous, Utah: Lupton, 660.
- Fierro limestone, Carboniferous, New Mexico: Paige, 824.
- Finlay formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Five Islands volcanics, Triassic, Nova Scotia and New Brunswick: Powers, 857a.
- Flambeau quartzite, pre-Cambrian, Wisconsin: Hotchkiss *et al.*, 489.
- Flathead quartzite, Cambrian, Montana: Walcott, 1146.
- Flat Rock dolomite, Devonian, Michigan and Ontario: Stauffer, 1038.
- Fleming formation, Miocene-Pliocene, Texas: Udden *et al.*, 1107.
- Foraker limestone, Carboniferous, Oklahoma: Heald, 441.
- Forbes limestone, Carboniferous, Iowa: Smith, 1009, 1010.
- Forelle(?), limestone, Carboniferous, Wyoming: Darton, 259.
- Fort Hall formation, Triassic, Idaho: Mansfield, 693.
- Fort Union formation, Tertiary, Montana: Calvert, 163; Rowe and Wilson, 925.
- Fort Union formation, Tertiary, Saskatchewan: Rose, 922.
- Fort Union formation, Tertiary (Eocene), South Dakota: Winchester *et al.*, 1248.
- Fort Worth limestone, Cretaceous, Texas: Udden *et al.*, 1107.
- Fountain formation, Pennsylvanian, Colorado: Finlay, 357.
- Fox Hills sandstone, Cretaceous, Colorado: Finlay, 357.
- Fox Hills sandstone, Cretaceous, Saskatchewan: Rose, 922.
- Fox Hills sandstone, Cretaceous, South Dakota: Winchester *et al.*, 1248.
- Francoisian series, pre-Cambrian, Missouri: Keyes, 565.
- Franconia sandstone, Cambrian, Minnesota: Sardeson, 937.
- Frankfort slate, Ordovician, New York: Foerste, 365.
- Fredericksburg division, Cretaceous, Texas: Udden *et al.*, 1107.
- Fredericksburg group, Cretaceous, Texas: Matson, 712.
- Fredericksburg terrane, Cretaceous, New Mexico: Keyes, 565.
- Fredericktown terrane, Cambrian, Missouri: Keyes, 565.
- Fredonia, Mississippian, Illinois: Brokaw, 111.
- Freeport (Lower) sandstones, Pennsylvanian, West Virginia: Reger, 892.
- Freeport (Upper) limestone, Pennsylvanian, West Virginia: Reger, 892.
- Freeport (Upper) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Frio clay, Tertiary, Texas: Deussen and Dole, 289.
- Frio formation, Eocene, Texas: Udden *et al.*, 1107.
- Fruendosa terrane, Ordovician, New Mexico: Keyes, 565.
- Frontier formation, Cretaceous, Wyoming: Hares, 424; Lupton, 659.
- Frontier sandstones, Cretaceous, Wyoming: Ziegler, 1275.
- Fruitland formation, New Mexico: Bauer, 52.
- Fusselman limestones, Silurian, New Mexico: Darton, 258; Paige, 824.
- Fusselman limestone, Silurian, Texas: Udden *et al.*, 1107.
- Fusselman limestones, Silurian, New Mexico: Keyes, 565.
- Gabriola formation, Cretaceous, British Columbia: Clapp, 188.
- Galena dolomite, Ordovician, Illinois: Trowbridge and Shaw, 1090.
- Galena dolomite, Ordovician, Illinois and Iowa: Shaw and Trowbridge, 982.
- Galena formation, Ordovician, Iowa: Howell, 492.
- Galena limestone, Ordovician, Minnesota: Sardeson, 937.
- Galena-Platteville limestones, Ordovician, Wisconsin: Weidman and Schultz, 1181.
- Galesteo terrane, Tertiary, New Mexico: Keyes, 565.
- Gallegos terrane, Carboniferous, New Mexico: Keyes, 565.
- Gallinas terrane, Cretaceous, New Mexico: Keyes, 565.
- Gannett group, Cretaceous(?), Idaho: Mansfield and Roundy, 698.
- Gaptank formation, Pennsylvania, Texas: Udden *et al.*, 1107.
- Garnuan series, pre-Cambrian, New Mexico: Keyes, 565.
- Garrett terrane, Cretaceous, New Mexico: Keyes, 565.
- Gatun formation, Oligocene, Canal Zone: MacDonald, 671.
- Genesee black shales, Devonian, Maryland: Grimsley, 416.
- George River series, pre-Cambrian, Nova Scotia: Woodman, 1258.
- Georgetown formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Gilan series, Quaternary, New Mexico: Keyes, 565.
- Gilbert (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.

- Gilbert (Upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Gilboy sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Gilliam formation, Permian, Texas: Udden *et al.*, 1107.
- Gladeville sandstone, Carboniferous, Virginia: Hinds, 467.
- Glance conglomerate, Cretaceous, Arizona: Bonillas *et al.*, 90.
- Glen Rose formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Glen Rose limestone, Cretaceous, Texas: Matson, 712.
- Glorietta terrane, Cretaceous, New Mexico: Keyes, 565.
- Golconda limestone, Mississippian, Illinois: Brokaw, 111.
- Goodland limestone, Cretaceous, Louisiana: Matson, 711.
- Goodnight terrane, Tertiary, Kansas: Keyes, 565.
- Goodridge formation, Pennsylvanian, Utah: Gregory, 405.
- Goodsir shale, Cambrian and Ordovician, British Columbia: Burling, 133.
- Goweran series, Silurian, Missouri: Keyes, 565.
- Gowganda formation, pre-Cambrian, Ontario: Collins, 220.
- Grafton sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Grainger shale, Carboniferous, Virginia: Hinds, 467.
- Grande terrane, Carboniferous, New Mexico: Keyes, 565.
- Grand Gulf formation, Cretaceous, Mississippi: Logan, 650.
- Grand Tower terrane, Devonian, Missouri: Keyes, 565.
- Graneros shale, Cretaceous, Colorado: Finlay, 357.
- Grapevine sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Graphic terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Grayson marls, Cretaceous, Texas: Udden *et al.*, 1107.
- Greene formation, Permian, Ohio: Stauffer, 1039.
- Greenfield dolomite, Silurian, Ohio: Prosser, 870.
- Greenfield member of Monroe formation, Ohio: Napper, 786.
- Greenhorn limestone, Cretaceous, Colorado: Finlay, 357.
- Green Pond conglomerate, Silurian, New Jersey: Schuchert, 961.
- Green River formation, Eocene, Colorado, Utah, and Wyoming: Winchester, 1247.
- Green River (?) formation, Tertiary, Utah: Lupton, 660.
- Green River formation, Tertiary, Utah: Robinson, 913.
- Grenville formation, pre-Cambrian, Quebec: Dresser, 313.
- Grenville limestone, pre-Cambrian, New York: Martin, 707.
- Grenville series, pre-Cambrian, New York: Martin, 707.
- Grenville series, pre-Cambrian, New York: Miller, 766, 767.
- Grenville series, pre-Cambrian, Ontario: Baker, 29.
- Grenville series, pre-Cambrian, Quebec: Wilson, 1243.
- Greybull sand, Cretaceous, Wyoming: Lupton, 659.
- Greyson shales, Algonkian, Montana: O'Connell, 802.
- Guadaloupan series, Carboniferous, New Mexico: Keyes, 565.
- Gulf series, Cretaceous, Louisiana: Matson, 711.
- Guyandot sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Guyandot (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Gym limestone, Carboniferous, New Mexico: Darton, 258.
- Haida formation, Cretaceous, British Columbia: MacKenzie, 679.
- Hale formation, Pennsylvanian, Arkansas: Purdue and Miser, 879.
- Hamilton beds, Devonian, Ohio: Stauffer, 1040.
- Hamilton formation, Devonian, West Virginia: Grimsley, 416.
- Hamilton shale formation, Devonian, Wisconsin: Weldman and Schultz, 1181.
- Hampton shale, Cambrian, Tennessee: Jenkins, 514.
- Harding sandstone, Ordovician, Colorado: Finlay, 357.
- Hardinsburg sandstone, Mississippian, Illinois: Brokaw, 111.
- Harpers shale, Cambrian, West Virginia: Grimsley, 416.
- Harvey conglomerate sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Haslam formation, Cretaceous, British Columbia: Clapp, 188.
- Hastings series, pre-Cambrian, Great Lakes region: Lawson, 620.
- Hatchetigbee formation, Tertiary, Gulf States: Berry, 63.
- Hattiesburg clay, Tertiary, Gulf States: Matson, 714.
- Hawkins terrane, Cambrian, New Mexico: Keyes, 565.
- Haymond formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Hays terrane, Cretaceous, Kansas: Keyes, 565.
- Hazelton formation, Jurassic, British Columbia: MacKenzie, 680.
- Hedges shale, Carboniferous, West Virginia: Grimsley, 416.
- Helderburg formation, Devonian, West Virginia: Grimsley 416.

- Helderbergian series, Devonian, Missouri : Keyes, 565.
- Helderbergian series, Devonian, New York : Schuchert, 961.
- Helena limestone, Algonkian, Montana : Walcott, 1146.
- Hernshaw sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Hickory sandstone, Cambrian, Texas : Udden *et al.*, 1107.
- Higham grit member, Triassic or Jurassic, Idaho : Mansfield, 693.
- High Falls shale, Silurian, New York : Schuchert, 961.
- Hillsboro sandstone, Silurian, Ohio : Prosser, 869, 870.
- Hoh formation, Jurassic (?), Washington : Weaver, 1176.
- Holtsclaw sandstone, Mississippian, Kentucky : Butts, 150.
- Homewood sandstone, Carboniferous, West Virginia : Krebs and Teets, 602 ; Reger, 892.
- Honna formation, Cretaceous, British Columbia : MacKenzie, 679.
- Horsethief sandstone, Cretaceous, Montana : Stebinger, 1041.
- Houten terrane, Tertiary, New Mexico : Keyes, 565.
- Hudson River group, Ordovician, New York : Foerste, 365.
- Hudson River series, Ordovician, New York : Schuchert, 961.
- Hueco limestone, Pennsylvanian, Texas : Udden *et al.*, 1107.
- Hundred sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Huron shale, Devonian, Ohio : Stauffer, 1040.
- Hypozoic, pre-Cambrian : Schuchert, 962.
- Iaegar (Lower) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Iaegar (Lower) shale, Carboniferous, West Virginia : Krebs and Teets, 602.
- Iaegar (Middle) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Iaegar (Upper) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Idaho Springs formation, pre-Cambrian, Colorado : Bastin and Hill, 51.
- Ilo formation, Cretaceous, Wyoming : Hintze, 468.
- Index granodiorite, Jurassic, Washington : Smith, 1022.
- Index granodiorite, Jurassic or Cretaceous, Washington : Weaver, 1176.
- Intermediate formation, Devonian, Alberta : Allan, 6.
- Ione formation, Eocene, California : Dickerson, 294.
- Iowan drift, Pleistocene, Iowa : Leighton, 626.
- Iron Mountain terrane, pre-Cambrian, Missouri : Keyes, 565.
- Ironton terrane, pre-Cambrian, Missouri : Keyes, 565.
- Jacalitos formation, Pliocene, California : Nomland, 795, 796.
- Jackson formation, Tertiary, Arkansas : Stephenson and Crider, 1047.
- Jackson formation, Tertiary, Gulf States : Matson, 714.
- Jackson formation, Tertiary, Mississippi : Hopkins, 483.
- Jackson group, Eocene, Georgia : Brantly, 105.
- Jackson marls, Cretaceous, Mississippi : Logan, 650.
- Jackson stage, Eocene, Texas : Udden *et al.*, 1107.
- Jane Lew sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Jasper limestone, Ordovician, Arkansas : Purdue and Miser, 879.
- Jennings formation, Devonian, West Virginia : Grimsley, 416.
- Joachim limestone, Ordovician, Arkansas : Purdue and Miser, 879.
- Joachim terrane, Ordovician, Missouri : Keyes, 565.
- John Day formation, Tertiary, Oregon : Collier, 218 ; Williams, 1229.
- Jollytown sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Jordan sandstone, Cambrian, Minnesota : Sardeson, 937.
- Jornadan series, Quaternary, New Mexico : Keyes, 565.
- Juana Diaz shale, Tertiary, Porto Rico : Reeds, 891.
- Juniata formation, Ordovician, Pennsylvania : Schuchert, 961.
- Kaibab limestone, Pennsylvanian, Arizona : Gregory, 405 ; Ransome, 881.
- Kamishak chert, Triassic, Alaska : Martin, 705.
- Kamloops volcanic group, Miocene, British Columbia : Drysdale, 316.
- Kanawha black flint, Carboniferous, West Virginia : Krebs and Teets, 602 ; Reger, 892.
- Kanawha granite, Carboniferous, West Virginia : Krebs and Teets, 602.
- Kano quartz diorite, Jurassic (?), British Columbia : MacKenzie, 679.
- Kansan drift, Pleistocene, Iowa : Leighton, 626.
- Kansan drift, Quaternary, Minnesota : Sardeson, 937.
- Keechelus series, Tertiary, Washington : Smith, 1022.
- Keefer sandstone, Silurian, West Virginia : Grimsley, 416.
- Keewatin, pre-Cambrian, Ontario : Hopkins, 140.
- Keewatin system, pre-Cambrian, Ontario : Hopkins, 485.
- Kemp clay beds, Cretaceous, Texas : Udden *et al.*, 1107.
- Kenwood sandstone, Mississippian, Kentucky : Butts, 150.
- Kessler limestone, Pennsylvanian, Arkansas : Purdue and Miser, 879.

- Keweenawan, pre-Cambrian, Ontario: Baker, 29; Knight, 585.
 Keyser formation, Devonian, Pennsylvania: Schuchert, 961.
 Keyser member, Devonian, West Virginia: Grimsley, 41C.
 Keystone sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
 Klamitia clays, Cretaceous, Texas: Udden *et al.*, 1107.
 Kickapoo marls, Cretaceous, Texas: Udden *et al.*, 1107.
 Killarney granite, pre-Cambrian, Ontario: Gollins, 220.
 Kingsdown terrane, Pleistocene, Kansas: Keyes, 565.
 Kings River sandstone member, Ordovician, Arkansas: Purdue and Miser, 879.
 Kiowa terrane, Cretaceous, Kansas: Keyes, 565.
 Kiowa terrane, Cretaceous, New Mexico: Keyes, 565.
 Kirtland shale, New Mexico: Bauer, 52.
 Kishinena formation, Eocene (?), British Columbia: MacKenzie, 678.
 Knob Lick terrane, pre-Cambrian, Missouri: Keyes, 565.
 Kokomo water lime, Silurian, Indiana: O'Connell, 592.
 Kootenai formation, Cretaceous, Montana: Barnett, 38.
 Kootenai formation, Cretaceous, Montana: Stebinger, 1041, 1042.
 Kootenay formation, Cretaceous, Alberta: Sinclair, 1000.
 Kootenay formation, Cretaceous, British Columbia: MacKenzie, 678.
 Kootenay formation, Jurassic, Alberta: McLearn, 683.
 Laberge series, Cretaceous or Jurassic, Yukon: Cairnes, 159.
 Lackawaxen conglomerate, Devonian, West Virginia: Grimsley, 416.
 Ladronean series, Carboniferous, New Mexico: Keyes, 565.
 Lafayette formation, Pleistocene, Texas: Udden *et al.*, 1107.
 Lafayette formation, Tertiary, Arkansas: Stephenson and Crider, 1047.
 Lagarto formation, Pliocene, Texas: Udden *et al.*, 1107.
 Lagrange formation, Tertiary, Tennessee: Purdue, 877.
 La Jara terrane, Cretaceous, New Mexico: Keyes, 565.
 Lake Valley limestone, Carboniferous, New Mexico: Darton, 258.
 Lake Valley terrane, Carboniferous, New Mexico: Keyes, 565.
 Lance formation, Cretaceous or Tertiary, Montana: Rowe and Wilson, 925.
 Lance formation, Tertiary (?), Saskatchewan: Rose, 922.
 Lance formation, Tertiary (?), South Dakota: Winchester *et al.*, 1248.
 Langara quartz diorite, Jurassic, British Columbia: MacKenzie, 679.
 Lanoria quartzite, pre-Cambrian, Texas: Udden *et al.*, 1107.
 Lapara formation, Miocene, Texas: Udden *et al.*, 1107.
 La Plata group, Jurassic, Arizona, Utah, and New Mexico: Gregory, 405.
 La Plata sandstone, Jurassic, Utah: Lupton, 660.
 La Plata terrane, Jurassic, New Mexico: Keyes, 565.
 Laramian series, Cretaceous, New Mexico: Keyes, 565.
 Laramie formation, Cretaceous, Colorado: Finlay, 357.
 Las Cascadas agglomerate, Canal Zone: MacDonald, 671.
 Latonia shale, Ordovician, Ohio: Fenneman, 352.
 Laurel limestone, Silurian, Ohio and Indiana: Croser, 870.
 Laurentian, pre-Cambrian, Ontario: Baker, 29.
 Laurentian, pre-Cambrian, Quebec: Presser, 313.
 Laurentian revolution, pre-Cambrian: Schuchert, 962.
 Lebo shale member, Cretaceous or Tertiary, Montana: Rowe and Wilson, 925.
 Leda or Champlain clays, Pleistocene, Canada: Johnstone, 533.
 Lee formation, Carboniferous, Virginia: Hinds, 467.
 Leonard formation, Permian, Texas: Udden *et al.*, 1107.
 Leray limestone, Ordovician, Ontario: Baker, 29; Kindle, 577.
 Leray limestone, Ordovician, New York: Miller, 766.
 Le Roux terrane, Triassic, New Mexico: Keyes, 565.
 Le Sueur terrane, Cambrian, Missouri: Keyes, 565.
 Lewis shale, New Mexico: Bauer, 52.
 Lewis terrane, Cretaceous, New Mexico: Keyes, 565.
 Lewisville beds, Cretaceous, Texas: Udden *et al.*, 1107.
 Liberty limestone, Ordovician, Ohio: Fenneman, 352.
 Lincoln formation, Oligocene, Washington: Weaver, 1176.
 Linley conglomerate, Tertiary, Montana: Calvert, 163.
 Lisbon series, New Hampshire: Lahee, 607.
 Little Falls dolomite, Cambrian, New York: Miller, 766.
 Livingston formation, Cretaceous, Montana: Calvert, 163.
 Lizzie gravels, Pleistocene, Texas: Udden *et al.*, 1107.
 Llano Estacado terrane, Tertiary, New Mexico: Keyes, 565.
 Lobo formation, Triassic(?), New Mexico: Darton, 258.
 Loganian, pre-Cambrian: Schuchert, 962.
 Lone terrane, Cambrian, New Mexico: Keyes, 565.

- Longfellow limestone, Ordovician, Arizona: Ransome, 881.
- Longwood shales, Silurian, New York and New Jersey: Schuchert, 961.
- Lorrain quartzite, pre-Cambrian, Ontario: Collins, 220.
- Lorraine formation, Ordovician, Ontario and Quebec: Foerste, 365.
- Lorraine formation, Ordovician, Pennsylvania: Schuchert, 961.
- Lorraine shales, Ordovician, New York: Foerste, 365.
- Loudoun formation, Cambrian, West Virginia: Grimsley, 416.
- Loupian series, Tertiary, Kansas: Keyes, 565.
- Lowville limestone, Ordovician, New York: Miller, 766.
- Lowville limestone, Ordovician, Ontario: Baker, 29; Kindle, 577.
- Lucas dolomite, Devonian, Michigan and Ohio: Stauffer, 1038.
- Ludlow lignite member, Tertiary(?), South Dakota: Winchester *et al.*, 1248.
- Lunasan series, Carboniferous, New Mexico: Keyes, 565.
- Lyman schists, New Hampshire: Lahee, 607.
- Lyman series, New Hampshire: Lahee, 607.
- Lykins formation, Permian(?), Colorado: Finlay, 357.
- Lyons sandstone, Pennsylvanian, Colorado: Finlay, 357.
- Lytton formation, Eocene, Texas: Udden *et al.*, 1107.
- McBean formation, Eocene, Georgia: Brantly, 105.
- McCarthy formation, Triassic, Alaska: Martin, 705; Moffit, 769.
- McCune terrane, Ordovician, Missouri: Keyes, 565.
- McElmo formation, Jurassic(?), Arizona, Utah, and New Mexico: Gregory, 405.
- McElmo terrane, Jurassic, New Mexico: Keyes, 565.
- McElmo formation, Jurassic(?), Utah: Lupton, 660.
- McKenzie formation, Silurian, West Virginia: Grimsley, 416.
- McKissick's Grove shales, Carboniferous, Iowa: Smith, 1009.
- McLeansboro formation, Pennsylvanian, Illinois: Cady, 156; Rich, 900; Savage, 940; Young, 1272.
- McMicken member, Ordovician, Ohio: Braun, 107.
- McMillan formation, Ordovician, Ohio: Braun, 107; Fenneman, 352.
- McNairy sand member, Cretaceous, Tennessee: Berry, 74.
- Maderan series, Carboniferous, New Mexico: Keyes, 565.
- Madison beds, Ordovician, Indiana: Culbertson, 239.
- Madison limestone, Cambrian, Wisconsin: Shipton, 994.
- Madison limestone, Carboniferous, Montana: Haynes, 440; Walcott, 1146.
- Madison limestone, Carboniferous, Wyoming: Mansfield, 694.
- Madison limestone, Mississippian, Montana: Barnett, 38.
- Magdalena formation, Carboniferous, New Mexico: Darton, 258.
- Magothy formation, Cretaceous, Atlantic coast: Clark *et al.*, 198.
- Magothy formation, Cretaceous, Maryland: Clark, 195.
- Mahoning sandstone, Carboniferous, Ohio: Copdit, 223.
- Mahoning sandstones, Pennsylvanian, West Virginia: Reger, 892.
- Mainstreet limestone, Cretaceous, Texas: Udden *et al.*, 1107.
- Malone formation, Jurassic, Texas: Udden *et al.*, 1107.
- Maloney series, Ordovician, Washington: Smith, 1022.
- Manasquan formation, Cretaceous, Atlantic coast: Clark *et al.*, 198.
- Mancos shale, Cretaceous, Arizona and New Mexico: Gregory, 405.
- Mancos shale, Cretaceous, Utah: Lupton, 660.
- Mancos shale, Cretaceous, Wyoming: Ziegler, 1275.
- Mangas terrane, Cambrian, New Mexico: Keyes, 565.
- Manitou limestone, Ordovician, Colorado: Finlay, 357.
- Mannington sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Manzano terrane, Carboniferous, New Mexico: Keyes, 565.
- Maquoketa beds, Ordovician, Iowa: Slocum, 1007.
- Maquoketa shale, Illinois: Savage, 944.
- Maquoketa shale, Ordovician, Illinois: Trowbridge and Shaw, 1090.
- Maquoketa shale, Ordovician, Illinois and Iowa: Shaw and Trowbridge, 982.
- Maquoketan series, Ordovician, Missouri: Keyes, 565.
- Marathon series, Ordovician, Texas: Udden *et al.*, 1107.
- Maravillas chert, Ordovician and Silurian, Texas: Udden *et al.*, 1107.
- Marble Falls limestone, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Marcellus formation, Devonian, West Virginia: Grimsley, 416.
- Marcellus shale, Devonian, New York: Smith, 1008.
- Marianna limestone, Tertiary, Florida: Matson, 714.
- Marietta (Lower) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Marietta (Upper) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Maricopa shale, Tertiary, California: English, 344.
- Marks Head marl, Miocene, Georgia: Brantly, 105.

- Marlbrook marl, Cretaceous, Louisiana: Matson, 711.
- Marlbrook marls, Cretaceous, Texas: Udden *et al.*, 1107.
- Marsh shale, Algonkian, Montana: Walcott, 1146.
- Martin limestone, Devonian, Arizona: Bonillas *et al.*, 90; Ransome, 881.
- Martinian series, Devonian, New Mexico: Keyes, 565.
- Martinsburg shale, Ordovician, West Virginia: Grimsley, 416.
- Mascall formation, Miocene, Oregon: Collier, 218.
- Masset formation, Tertiary, British Columbia: MacKenzie, 679.
- Matawan formation, Cretaceous, Atlantic coast: Clark *et al.*, 198.
- Matawan formation, Cretaceous, Maryland: Clark, 195.
- Matewan sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Maude formation, Jurassic, British Columbia: MacKenzie, 679.
- Maya terrane, Tertiary, New Mexico: Keyes, 565.
- Mayville limestone, Silurian, Wisconsin: Savage, 944.
- Maysville group, Ordovician, Ohio: Fenneman, 352.
- Maxville limestone, Mississippian, Ohio: Lamb, 609.
- Maxwell terrane, Tertiary, New Mexico: Keyes, 565.
- Meade terrane, Pleistocene, Kansas: Keyes, 565.
- Meagher limestone, Cambrian, Montana: Walcott, 1146.
- Medina formation, Silurian, West Virginia: Grimsley, 416.
- Medina quartzites, Silurian, Pennsylvania: Schuchert, 961.
- Medina series, Silurian, New York: Schuchert, 961.
- Medina (white) sandstone, Silurian, West Virginia: Grimsley, 416.
- Meeteetse formation, Cretaceous, Wyoming: Hintze, 468.
- Menard formation, Mississippian, Illinois: Brokaw, 111.
- Mendez marls, Eocene, Mexico: Huntley, 503.
- Mendota limestone, Cambrian, Wisconsin: Shipton, 994.
- Mentor terrane, Cretaceous, Kansas: Keyes, 565.
- Merced series, Pliocene, California: Martin, 704.
- Mesaverde formation, Cretaceous, Arizona and New Mexico: Gregory, 405.
- Mesaverde formation, Cretaceous, Utah: Lupton, 660.
- Mesaverde formation, Cretaceous, Wyoming: Lupton, 659; Ziegler, 1275.
- Mesaverde formation, New Mexico: Bauer, 52.
- Mesa Verde terrane, Cretaceous, New Mexico: Keyes, 565.
- Mescal limestone, Cambrian (?), Arizona: Ransome, 881.
- Midway formation, Eocene, Georgia: Brantly, 105.
- Midway formation, Eocene, Texas: Matson, 712.
- Midway formation, Tertiary, Arkansas: Stephenson and Crider, 1047.
- Midway formation, Tertiary, Louisiana: Matson, 711.
- Midway formation, Tertiary, Gulf States: Berry, 63.
- Midway stage, Eocene, Texas: Udden *et al.*, 1107.
- Milesburg formation, Devonian, Pennsylvania: Schuchert, 961.
- Millican formation, pre-Cambrian, Texas: Udden *et al.*, 1107.
- Mimbresan series, Ordovician, New Mexico: Keyes, 565.
- Minnesotan series, Ordovician, Missouri: Keyes, 565.
- Mississagi quartzite, pre-Cambrian, Ontario: Collins, 220.
- Mississippian series, Carboniferous, Missouri: Keyes, 565.
- Mississippian series, Carboniferous, Virginia: Hinds, 467.
- Missourian series, Carboniferous, Kansas: Keyes, 565.
- Missourian series, Carboniferous, Missouri: Keyes, 565.
- Modoc limestone, Carboniferous, Arizona: Ransome, 881.
- Modoc terrane, Carboniferous, New Mexico: Keyes, 565.
- Moencopi formation, Permian (?), Utah and Arizona: Gregory, 405.
- Mohawkian series, Ordovician, Missouri: Keyes, 565.
- Monitor ("Logan") sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Monmouth formation, Cretaceous, Atlantic coast: Clark *et al.*, 198.
- Monmouth formation, Cretaceous, Maryland: Clark, 195.
- Monongahela formation, Carboniferous, Ohio: Condit, 223.
- Monongahela series, Pennsylvanian, West Virginia: Reger, 892.
- Monroe formation, Silurian, Ohio: Prosser, 869, 870.
- Montana granite, Cretaceous, Colorado: Finlay, 357.
- Montanan series, Cretaceous, Kansas: Keyes, 565.
- Montanan series, Cretaceous, New Mexico: Keyes, 565.
- Monterey group, Tertiary, California: English, 344.
- Montesano formation, Miocene, Washington: Weaver, 1176.
- Montesano group, Mississippian, Illinois and Kentucky: Ulrich, 1112.

- Montosa terrane, Carboniferous, New Mexico: Keyes, 565.
- Montoya limestone, Ordovician, New Mexico: Darton, 258; Paige, 824.
- Montoya limestone, Ordovician, Texas: Udden *et al.*, 1107.
- Montoyan series, Ordovician, New Mexico: Keyes, 565.
- Moose River sandstone, Devonian, Maine: Williams, 1226.
- Morales member, Tertiary, California: English, 344.
- Morenci shale, Devonian (?), Arizona: Ransome, 881.
- Morgantown sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Morita limestone, Cretaceous, Arizona: Bonillas *et al.*, 90.
- Morrison formation: Cretaceous (?), Wyoming: Ziegler, 1275.
- Morrison formation, Cretaceous, Rocky Mountain region: Mook, 776.
- Morrison (?) formation, Cretaceous (?), Montana: Barnett, 38.
- Morrison formation: Cretaceous (?), Wyoming: Hares, 424.
- Morrison formation, Jurassic or Cretaceous, Colorado: Finlay, 357.
- Morrison formation, Jurassic or Cretaceous, Wyoming: Darton, 259.
- Morrisonian series, Jurassic, Kansas: Keyes, 565.
- Morrisonian series, Jurassic, New Mexico: Keyes, 565.
- Morrow group, Pennsylvanian, Arkansas: Purdue and Miser, 879.
- Mosca terrane, Carboniferous, New Mexico: Keyes, 565.
- Mottville member, Devonian, New York: Smith, 1008.
- Mount Auburn member, Ordovician, Ohio: Braun, 107.
- Mount Auburn shale, Ordovician, Ohio: Fenneman, 352.
- Mount Hope formation, Ordovician, Ohio: Braun, 107.
- Mount Hope member, Ordovician, Ohio: Fenneman, 352.
- Mount Rosa granite, pre-Cambrian, Colorado: Finlay, 357.
- Mount Selman formation, Eocene, Texas: Udden *et al.*, 1107.
- Mount Selman formation, Tertiary, Texas: Deussen and Dole, 289.
- Mount Stevens group, pre-Cambrian (?), Yukon: Cairnes, 159.
- Mowry shale, Cretaceous, Wyoming: Hares, 424; Lupton, 639; Ziegler, 1275.
- Muav limestone, Cambrian, Arizona: Ransome, 881.
- Mural limestone, Cretaceous, Arizona: Bonillas *et al.*, 90.
- Myers, red shale, Carboniferous, West Virginia: Grimsley, 416.
- Myrick formation, Eocene, Texas: Udden *et al.*, 1107.
- Myrick formation, Tertiary, Texas: Deussen and Dole, 289.
- Myrtle formation, Cretaceous, California: Martin, 704.
- Myrtle formation, Cretaceous, Oregon: Butler and Mitchell, 147.
- Nacatoch sand (?), Cretaceous, Arkansas: Stephenson and Crider, 1047.
- Nacatoch sand, Cretaceous, Louisiana: Matson, 711.
- Nacatoch sand, Cretaceous, Texas: Udden *et al.*, 1107.
- Nacatoch sand member, Cretaceous, Texas: Matson, 712.
- Nacimientan series, Tertiary, New Mexico: Keyes, 565.
- Naco limestone, Pennsylvanian, Arizona: Bonillas *et al.*, 90; Ransome, 881.
- Naheola formation, Tertiary, Gulf States: Berry, 63.
- Naiad terrane, Silurian, New Mexico: Keyes, 565.
- Nanafalia formation, Tertiary, Gulf States: Berry, 63.
- Nanaimo series, Cretaceous, British Columbia: Clapp, 188.
- Naugatuck sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Navarro formation, Cretaceous, Texas: Matson, 712; Udden *et al.*, 1107.
- Navajo sandstone, Jurassic, Arizona, Utah, and New Mexico: Gregory, 405.
- Navajo terrane, Cretaceous, New Mexico: Keyes, 565.
- Nebraskan till, Pleistocene, Iowa: Leighton, 626.
- Neva limestone, Carboniferous, Oklahoma: Heald, 441.
- New Albany black shale, Devonian, Indiana: Culbertson, 239.
- Newark group, Triassic, Nova Scotia and New Brunswick: Powers, 857a.
- Newcastle formation, Cretaceous, British Columbia: Clapp, 188.
- New Haven limestone, Pennsylvanian, Illinois: Cady, 156; Young, 1272.
- Newman limestone, Carboniferous, Virginia: Hinds, 467.
- New Providence shale, Mississippian, Kentucky: Butts, 150.
- New Richmond sandstone, Ordovician, Iowa: Howell, 492.
- New River group, Carboniferous, West Virginia: Krebs and Teets, 602.
- New Scotland member, Devonian, West Virginia: Grimsley, 416.
- Niagara dolomite, Silurian, Illinois and Iowa: Shaw and Trowbridge, 982.
- Niagara limestone, Silurian, Wisconsin: Weidman and Schultz, 1181.
- Niagara (McKenzie) formation, Silurian, West Virginia: Grimsley, 416.
- Niagaran dolomite, Silurian, Illinois: Trowbridge and Shaw, 1090.
- Niagaran series, Silurian, Missouri: Keyes, 565.
- Nicola group, Jura-Triassic, British Columbia: Drysdale, 316.
- Nikolai greenstone, Alaska: Moffit, 769.

- Nikolai greenstone, Triassic or Permian, Alaska: Martin, 705.
- Niuos terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Niobrara formation, Cretaceous, Colorado: Finlay, 357.
- Niobrara formation, Cretaceous, Wyoming: Ziegler, 1275.
- Niobrara shale, Cretaceous, Wyoming: Darton, 259.
- Nishnabotna sandstone, Carboniferous, Iowa: Smith, 1010.
- Nishnabotna terrane, Cretaceous, Missouri: Keyes, 565.
- Nizina limestone, Triassic, Alaska: Martin, 705.
- Noix oolite, Silurian, Missouri: Rowley, 926.
- Nonesuch formation, pre-Cambrian, Wisconsin: Weidman and Schultz, 1181.
- Normanskill sandstones, Ordovician, New York: O'Connell, 802.
- North Fork shale, Carboniferous, West Virginia: Krebs and Teets, 602.
- North Mountain basalt, Triassic, Nova Scotia and, New Brunswick: Powers, 857a.
- Northumberland formation, Cretaceous, British Columbia: Clapp, 188.
- Norton formation, Carboniferous, Virginia: Hinds, 467.
- Nugget sandstone, Jurassic or Triassic, Idaho: Mansfield, 693.
- Nugget sandstone, Jurassic or Triassic, Wyoming: Mansfield, 694.
- Nuttall (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Oak Creek formation, Miocene, South Dakota: Troxell, 1093.
- Oak Grove sand, Tertiary, Florida: Berry, 65.
- Oakville formation, Miocene, Texas: Udden *et al.*, 1107.
- Oakville sandstone, Tertiary, Texas: Deussen and Dole, 289.
- Ocala formation, Eocene, Georgia: Brantly, 105.
- Ocala limestone, Tertiary, Florida: Matson, 714.
- Octoraro schist, Ordovician, Pennsylvania: Bliss and Jonas, 88.
- Ogalalla terrane, Tertiary, Kansas: Keyes, 565.
- Ohara, Mississippian, Illinois: Brokaw, 111.
- Ohio shale, Ohio: Prosser, 869.
- Ojo Alamo sandstone, New Mexico: Bauer, 52.
- Okefenokee formation, Pleistocene, Georgia: Brantly, 105.
- Oklahoman series, Carboniferous, Kansas: Keyes, 565.
- Oneota dolomite, Ordovician, Iowa: Howell, 492.
- Oneota dolomite, Ordovician, Minnesota: Sardeson, 937.
- Onondaga formation, Devonian, West Virginia: Grimsley, 416.
- Olentangy shale, Devonian, Ohio: Stauffer, 1040.
- Oriskanian series, Devonian, Missouri: Keyes, 565.
- Oriskany sandstone formation, Devonian, West Virginia: Grimsley, 416.
- Orlando limestone, Pennsylvanian, West Virginia: Reger, 892.
- Osgood beds, Silurian, Ohio and Indiana: Prosser, 870.
- Osgood shale, Silurian, Indiana: Culbertson, 239.
- Ottertail limestone, Cambrian, Alberta: Burling, 133.
- Outer formation, pre-Cambrian, Wisconsin: Weidman and Schultz, 1181.
- Ozarkian series, Cambrian, Missouri: Keyes, 565.
- Palestine sandstone, Mississippian, Illinois: Brokaw, 111.
- Palestine sandstone, Mississippian, Illinois and Kentucky: Weller, 1185.
- Palomasan series, Quaternary, New Mexico: Keyes, 565.
- Paluxy formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Paluxy sand, Cretaceous, Texas: Matson, 712.
- Pamella formation, Ordovician, Ontario: Baker, 29; Kindle, 577.
- Panama formation, Oligocene, Canal Zone: MacDonald, 671.
- Panhandle beds, Miocene, Texas: Udden *et al.*, 1107.
- Panther sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Park shale, Cambrian, Montana: Walcott, 1146.
- Park City formation, Carboniferous, Wyoming: Condit, 224.
- Parkhead sandstone, Devonian, West Virginia: Grimsley, 416.
- Pascagoula clay, Tertiary, Gulf States: Matson, 714.
- Pascagoula formation, Cretaceous, Mississippi: Logan, 650.
- Paskapoo formation, Tertiary, Alberta: Sinclair, 1000.
- Paskapoo formation, Tertiary and Cretaceous, Alberta: Slipper, 1006.
- Patapsco formation, Cretaceous, Maryland: Clark, 195.
- Pato red member, Tertiary, California: English, 344.
- Patuxent formation, Cretaceous, Maryland: Clark, 195.
- Pawpaw beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Payette formation, Eocene (?), Idaho: Jones, 536.
- Pearlette terrane, Pleistocene, Kansas: Keyes, 565.
- Peay sandstone member, Cretaceous, Wyoming: Lupton, 659.
- Pecosian series, Tertiary, New Mexico: Keyes, 565.
- Pecurisan series, pre-Cambrian, New Mexico: Keyes, 565.

- Peerless sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pella beds, Carboniferous, Iowa: Weller and Van Tuyl, 1187.
- Pella limestone, Mississippian, Iowa: Van Tuyl, 1122.
- Pennington shale, Carboniferous, Virginia: Hinds, 467.
- Pennsylvanian series, Carboniferous, Virginia: Hinds, 467.
- Penasco terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Percha shale, Devonian, New Mexico: Darton, 258; Paige, 824.
- Perchan series, Devonian, New Mexico: Keyes, 565.
- Pete terrane, Cretaceous, Kansas: Keyes, 565.
- Peterson limestone, Cretaceous(?), Idaho: Mansfield and Roundy, 698.
- Phosphoria formation, Carboniferous, Wyoming: Mansfield, 694.
- Pictured Cliffs sandstone, New Mexico: Bauer, 52.
- Pictured Cliffs terrane, Cretaceous, New Mexico: Keyes, 565.
- Pierpont sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pierre shale, Cretaceous, Colorado: Finlay, 357.
- Pierre shale, Cretaceous, Montana: Rowe and Wilson, 925.
- Pierre shale, Cretaceous, Saskatchewan: Rose, 922.
- Pierre shale, Cretaceous, South Dakota: Winchester *et al.*, 1248.
- Pierre shale, Cretaceous, Wyoming: Hintze, 468.
- Pierre formation, Cretaceous, Wyoming: Ziegler, 1275.
- Pikes Peak granite, pre-Cambrian, Colorado: Finlay, 357.
- Pilgrim limestone, Cambrian, Montana: Walcott, 1146.
- Pilot Knob terrane, pre-Cambrian, Missouri: Keyes, 565.
- Pinal schist, pre-Cambrian, Arizona: Bonillas *et al.*, 90; Ransome, 881.
- Pina Vititos terrane, Cretaceous, New Mexico: Keyes, 565.
- Pine Creek limestone, Pennsylvania, West Virginia: Reger, 892.
- Pineville sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pinkerton sandstone, Carboniferous, West Virginia: Grimsley, 416.
- Pinto limestone, Cretaceous, Texas: Udden *et al.*, 1107.
- Pioneer shale, Cambrian(?), Arizona: Ransome, 881.
- Pitkin limestone, Mississippian, Arkansas: Purdue and Miser, 879.
- Pittsburgh red shale, Pennsylvanian, West Virginia: Reger, 892.
- Pittsburgh (Lower) limestone member, Carboniferous, Ohio: Condit, 223.
- Pittsburgh (Lower) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Pittsburgh (Upper) limestone, Pennsylvanian, West Virginia: Reger, 892.
- Pittsford shale, Silurian, New York: O'Connell, 802.
- Platte shales, Carboniferous, Iowa: Smith, 1009, 1010.
- Platteville formation, Ordovician, Iowa: Howell, 492.
- Platteville limestone, Ordovician, Illinois: Shaw and Trowbridge, 982; Trowbridge and Shaw, 1090.
- Platteville limestone, Ordovician, Minnesota: Sardeson, 937.
- Platteville-Galena limestone, Ordovician, Illinois: Sauer, 938.
- Plattsburgh limestone, Carboniferous, Iowa: Smith, 1009.
- Pocahontas group, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pocahontas (Lower) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pocahontas (Upper) sandstone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Pocono formation, Carboniferous, West Virginia: Grimsley, 416.
- Poinsettian series, Tertiary, Missouri: Keyes, 565.
- Point Pleasant limestone, Ordovician, Ohio: Fenneman, 352.
- Pokegama quartzite, Algonkian, Minnesota: Wolff, 1253.
- Portage formation, Devonian, West Virginia: Grimsley, 416.
- Porter horizon, Oligocene, Washington: Weaver, 1176.
- Porters Creek formation, Tertiary, Tennessee: Purdue, 877.
- Port Hudson clays, Pleistocene, Texas: Udden *et al.*, 1107.
- Portneuf limestone, Triassic, Idaho: Mansfield, 693.
- Potomac group, Cretaceous, Maryland: Clark, 195.
- Potsdam sandstone, Cambrian, Illinois: Trowbridge and Shaw, 1090.
- Potsdam sandstone, Cambrian, New York: Miller, 766.
- Potsdam sandstone, Cambrian, Wisconsin: Weidman and Schultz, 1181.
- Potsdam series, Cambrian, Ontario: Baker, 29.
- Pottsboro subgroup, Cretaceous, Texas: Udden *et al.*, 1107.
- Pottsville formation, Pennsylvanian, Illinois: Brokaw, 111; Cady, 156; Rich, 900; Savage, 940; Young, 1272.
- Pottsville series, Carboniferous, West Virginia: Krebs and Teets, 602; Reger, 892.
- Powell limestone, Ordovician, Arkansas: Purdue and Miser, 879.
- Prairie du Chien, Ordovician, Illinois: Trowbridge and Shaw, 1090.
- Prairie du Chien formation, Ordovician, Iowa: Howell, 492.
- Prairie du Chien group, Illinois: Sauer, 938.

- Pre-Kansan drift, Quaternary, Minnesota : Sardeson, 937.
- Presidio beds, Cretaceous, Texas : Udden *et al.*, 1107.
- Preston beds, Cretaceous, Texas : Udden *et al.*, 1107.
- Preuss sandstone, Jurassic, Idaho : Mansfield and Roundy, 698.
- Protection formation, Cretaceous, British Columbia : Clapp, 188.
- Proterozoic era, pre-Cambrian : Schuchert, 962.
- Prout limestone, Devonian, Ohio : Stauffer, 1040.
- Puerco formation, New Mexico : Bauer, 52.
- Puerco terrane, Tertiary, New Mexico : Keyes, 565.
- Pulaski shales, Ordovician, New York : Foerste, 365.
- Pulliam formation, Cretaceous, Texas : Udden *et al.*, 1107.
- Purgatoire formation, Cretaceous, Colorado : Finlay, 357.
- Purissima formation, Pliocene, California : Martin, 704.
- Purslane sandstone, Carboniferous, West Virginia : Grimsley, 416.
- Quaco conglomerate, Triassic, Nova Scotia and New Brunswick : Powers, 857a.
- Quadrant formation, Carboniferous, Montana : Haynes, 440 ; Walcott, 1146.
- Quadrant formation, Pennsylvanian (?), Montana : Barnett, 38.
- Queen Charlotte series, Cretaceous, British Columbia : MacKenzie, 679.
- Queen Charlotte Islands formation, Cretaceous, British Columbia : Drysdale, 316.
- Queen City formation, Eocene, Texas : Udden *et al.*, 1107.
- Queenston shales, Ordovician, New York and Ontario : Foerste, 365.
- Quinnimont sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Quitman bed Cretaceous, Texas : Udden *et al.*, 1107.
- Raleigh (Lower) sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Raleigh (Upper) Sandstone, Carboniferous, West Virginia : Krebs and Teets, 602.
- Rancocas formation, Cretaceous, Atlantic coast : Clark *et al.*, 198.
- Rancocas formation, Cretaceous, Maryland : Clark, 195.
- Raritan formation, Cretaceous, Atlantic coast : Clark, *et al.*, 198.
- Raritan formation, Cretaceous, Maryland : Clark, 195.
- Ratonan series, Tertiary, New Mexico : Keyes, 565.
- Rattlesnake beds, Cretaceous, Texas : Udden *et al.*, 1107.
- Rattlesnake formation, Pliocene, Oregon : Collier, 218.
- Red Eagle limestone, Carboniferous, Oklahoma : Heald, 441.
- Redrock Canyon sandstone, Tertiary, California : English, 344.
- Redstone limestone, Pennsylvanian, West Virginia : Reger, 892.
- Redwall limestone, Mississippian, Arizona : Ransome, 881.
- Renault limestone, Mississippian, Illinois : Brokaw, 111.
- Rexmont volcanics, Eocene (?), British Columbia : Drysdale, 316.
- Reynosa formation, Pleistocene, Texas : Udden *et al.*, 1107.
- Richmond formation, Ohio : Braun, 107.
- Richmond formation, Ordovician, Ohio and Indiana : Prosser, 870.
- Richmond formation, Ordovician, Ontario and Quebec : Foerste, 365.
- Richmond formation, Ordovician, Quebec : Dresser, 313.
- Richmond group, Ordovician, Ohio : Fenneman, 352.
- Richmond limestone, Ordovician, Illinois : Sauer, 938.
- Rideau beds, Ordovician, Ontario : Baker, 29 ; Kindle, 577.
- Ripley formation, Cretaceous, Tennessee : Berry, 74 ; Purdue, 877.
- Ripley marls, Cretaceous, Mississippi : Logan, 650.
- Ripleyan series, Cretaceous, Missouri : Keyes, 565.
- Roberval formation, pre-Cambrian, Quebec : Dresser, 313.
- Rociada terrane, pre-Cambrian, New Mexico : Keyes, 565.
- Rock Creek beds, Pleistocene, Texas : Udden *et al.*, 1107.
- Rockwell formation, Carboniferous, West Virginia : Grimsley, 416.
- Rondout waterlime formation, Silurian, West Virginia : Grimsley, 416.
- Rosewood shale, Mississippian, Kentucky : Butts, 150.
- Rosiclare, Mississippian, Illinois : Brokaw, 111.
- Ross limestone, Triassic, Idaho : Mansfield, 693.
- Royal shale, Carboniferous, West Virginia : Krebs and Teets, 602.
- Rush Run sandstone, Pennsylvanian, West Virginia : Reger, 892.
- Rustler formation, Permian, Texas : Udden *et al.*, 1107.
- Saguenay anorthosite, pre-Cambrian, Quebec : Dresser, 313.
- Ste. Genevieve formation, Carboniferous, Iowa : Weller and Van Tuyl, 1187.
- Ste. Genevieve limestone, Mississippian, Illinois : Rich, 900.
- Ste. Genevieve limestone, Mississippian, Kentucky : Butts, 150.
- St. Joe limestone member, Mississippian, Arkansas : Purdue and Miser, 879.
- St. Lawrence formation, Cambrian, Minnesota : Sardeson, 937.
- St. Louis limestone, Mississippian, Illinois : Rich, 900.
- St. Louis limestone, Carboniferous, Iowa : Weller and Van Tuyl, 1187.

- St. Louis limestone, Mississippian, Iowa, Illinois, and Missouri: Van Tuyl, 1122.
- St. Louis limestone, Mississippian, Kentucky: Butts, 150.
- St. Mary River formation, Cretaceous, Alberta: Stewart, 1051.
- St. Mary River formation, Eocene (?) Montana: Stebinger, 1041.
- St. Peter formation, Ordovician, Iowa: Howell, 492.
- St. Peter sandstone, Illinois: Sauer, 938.
- St. Peter sandstone, Ordovician, Arkansas: Purdue and Miser, 879.
- St. Peter sandstone, Ordovician, Illinois: Trowbridge and Shaw, 1090.
- St. Peter sandstone, Ordovician, Minnesota: Sardeson, 937.
- St. Peter sandstone, Ordovician, Wisconsin: Weidman and Schultz, 1181.
- St. Stephens limestone, Tertiary, Alabama: Matson, 714.
- Salmon River sandstone, Ordovician, New York: Foerste, 365.
- Salt Lake beds, Pliocene, Wyoming: Mansfield, 694.
- Saltsburg sandstone, Pennsylvanian, West Virginia: Reger, 892.
- San Carlos beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Sandia terrane, Carboniferous, New Mexico: Keyes, 565.
- Sandoval terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Sandy Huff shale, Carboniferous, West Virginia: Krebs and Teets, 602.
- San Felipe formation, Mexico: Huntley, 503.
- San Miguel beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Santa Fe terrane, Tertiary, New Mexico: Keyes, 565.
- Santa Margarita formation, Tertiary, California: English, 344.
- Santa Rita series, Silurian, New Mexico: Keyes, 565.
- Santiago chert, Mississippian (?), Texas: Udden *et al.*, 1107.
- Sapello terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Sarten limestone, Cretaceous, New Mexico: Darton, 258.
- Satanka (?) shale, Carboniferous, Wyoming: Darton, 259.
- Satilla formation, Pleistocene, Georgia: Brantly, 105.
- Sawatch sandstone, Cambrian, Colorado: Finlay, 357.
- Sawback formation, Cambrian, Alberta: Allan, 6; Burling, 133.
- Scanlan conglomerate, Cambrian, Arizona: Ransome, 881.
- Schenectady bluestones, Ordovician, New York: O'Connell, 802.
- Scots Bay formation, Triassic, Nova Scotia and New Brunswick: Powers, 857a.
- Seine series, pre-Cambrian, Great Lakes region: Lawson, 620.
- Seine slate, quartzite, and conglomerate, pre-Cambrian, Great Lakes region: Lawson, 620.
- Selkirk period, pre-Cambrian, Missouri: Keyes, 565.
- Selma chalk, Cretaceous, Mississippi: Logan, 650.
- Selma clay, Cretaceous, Tennessee: Purdue, 877.
- Seneca series, Devonian, Missouri: Keyes, 565.
- Serna terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Serpent quartzite, pre-Cambrian, Ontario: Collins, 220.
- Seth limestone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Sewickley limestone, Pennsylvanian, West Virginia: Reger, 892.
- Sewickley (Lower) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Sewickley (Upper) sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Sexton terrane, Silurian, Missouri: Keyes, 565.
- Sexton Creek limestone, Silurian, Illinois: Savage, 944.
- Seymour deposits, Pleistocene, Texas: Udden *et al.*, 1107.
- Shady limestone, Cambrian, Tennessee: Jenkins, 514.
- Shafter beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Shakopee dolomite, Ordovician, Iowa: Howell, 492.
- Shakopee dolomite, Ordovician, Minnesota: Sardeson, 937.
- Shandon quartzites, Cambrian, New Mexico: Keyes, 565.
- Shawangunk conglomerate, Silurian, New York: O'Connell, 802.
- Shawangunk formation, Silurian, New York: Schuchert, 961.
- Sheguiandah beds, Ordovician, Ontario: Foerste, 365.
- Shenandoah limestone, Cambrian and Ordovician, Pennsylvania: Bliss and Jonas, 88.
- Shinarump conglomerate, Triassic, Arizona and Utah: Gregory, 405.
- Shinarump terrane, Trias, New Mexico: Keyes, 565.
- Shoal Creek limestone, Pennsylvanian, Illinois: Cady, 156; Young, 1272.
- Shoal River marl, Tertiary, Florida: Berry, 65.
- Sierra terrane, Carboniferous, New Mexico: Keyes, 565.
- Silver terrane, Devonian, New Mexico: Keyes, 565.
- Silver Plume granite, pre-Cambrian, Colorado: Bastin and Hill, 51.
- Skeena formation, Cretaceous, British Columbia: MacKenzie, 680.
- Skidegate formation, Cretaceous, British Columbia: MacKenzie, 679.
- Skonun formation, Tertiary, British Columbia: MacKenzie, 679.

- Skrainka terrane, pre-Cambrian, Missouri: Keyes, 565.
- Sloans Valley formation, Mississippian, Illinois: Brokaw, 111.
- Smithwick shale, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Sneeds limestone lentil, Ordovician, Arkansas: Purdue and Miser, 879.
- Snoqualmie granodiorite, Miocene, Washington: Weaver, 1176.
- Snoqualmie granodiorite, Tertiary, Washington: Smith, 1022.
- Snyder terrane, Devonian, Missouri: Keyes, 565.
- Solitario terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Sonora terrane, Carboniferous, Missouri: Keyes, 565.
- Southgate member, Ordovician, Ohio: Braun, 107.
- Sparta shale, Cambrian, Wisconsin: Ship-ton, 994.
- Spence Bridge volcanic group, Jura-Cretaceous, British Columbia: Drysdale, 316.
- Spergen limestone, Mississippian, Kentucky: Butts, 150.
- Spokane formation, pre-Cambrian, Montana: Haynes, 440.
- Spokane shale, Algonkian, Montana: Walcott, 1146.
- Springfield dolomite, Silurian, Ohio: Prosser, 870.
- Stockton limestone, Carboniferous, West Virginia: Krebs and Teets, 602.
- Stockton, member of Newark series, Triassic, Pennsylvania: Morningstar, 780.
- Stones River limestone, Ordovician, West Virginia: Grimsley, 416.
- Strawn formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Stump sandstone, Jurassic, Idaho: Mansfield and Roundy, 698.
- Sucarnoochee clay, Tertiary, Gulf States: Berry, 63.
- Sundance formation, Jurassic, Wyoming: Darton, 259; Ziegler, 1275.
- Supai formation, Pennsylvanian, Arizona: Ransome, 881.
- Superioric period, pre-Cambrian, Missouri: Keyes, 565.
- Sutter formation, Eocene, California: Dickerson, 294.
- Swank sandstone, Tertiary, Washington: Smith, 1022.
- Sylamore sandstone member, Devonian, Arkansas: Purdue and Miser, 879.
- Tamasopa limestone, Cretaceous, Mexico: Huntley, 503.
- Taosan series, pre-Cambrian, New Mexico: Keyes, 565.
- Tapeats sandstone, Cambrian, Arizona: Ransome, 881.
- Tarkio limestones, Carboniferous, Iowa: Smith, 1009, 1010.
- Tar Springs sandstone, Mississippian, Illinois: Brokaw, 111.
- Tar Spring sandstone, Mississippian, Illinois and Kentucky: Weller, 1185.
- "Tar Spring" sandstone, Mississippian, Kentucky: Butts, 150.
- Taylor formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Taylor marl, Cretaceous, Texas: Matson, 712.
- Tazin series, pre-Cambrian, Northwest Territory, Canada: Camsell, 165.
- Teapot sandstone member, Cretaceous, Wyoming: Hares, 424.
- Tecovas formation, Triassic, Texas: Udden *et al.*, 1107.
- Tecovas terrane, Triassic, Kansas: Keyes, 565.
- Tecovas terrane, Triassic, New Mexico: Keyes, 565.
- Tejon formation, Eocene, Washington: Weaver, 1176.
- Tejon group, Eocene, California: Dickerson, 294.
- Tellera terrane, Carboniferous, New Mexico: Keyes, 565.
- Tellera terrane, Carboniferous, New Mexico: Keyes, 565.
- Temple Butte limestone, Devonian, Arizona: Ransome, 881.
- Tennessean series, Carboniferous, Missouri: Keyes, 565.
- Tensleep sandstone, Carboniferous, Wyoming: Condit, 224.
- Tensleep sandstone, Pennsylvanian, Wyoming: Hares, 424.
- Terlingua beds, Cretaceous, Texas: Udden *et al.*, 1107.
- Tesnus formation, Pennsylvanian, Texas: Udden *et al.*, 1107.
- Texhoman series, Tertiary, Kansas: Keyes, 565.
- Thaynes group, Triassic, Idaho: Mansfield, 693.
- Thaynes limestone, Triassic, Wyoming: Mansfield, 694.
- Thebes terrane, Ordovician, Missouri: Keyes, 565.
- Theresa beds, Cambrian, New York: Miller, 766.
- Thermopolis shale, Cretaceous, Wyoming: Lupton, 659; Ziegler, 1275.
- Thessalon greenstone, pre-Cambrian, Ontario: Knight, 585.
- Theta subdivision, Jurassic, Texas: Udden *et al.*, 1107.
- Three Forks formation, Devonian, Montana: Haynes, 439, 440.
- Tijeras terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Timiskaming series, pre-Cambrian, Ontario: Hopkins, 485.
- Timpas terrane, Cretaceous, New Mexico: Keyes, 565.
- Todilto formation, Jurassic, Arizona and New Mexico: Gregory, 405.
- Tohachi shale, Tertiary, Arizona and New Mexico: Gregory, 405.

- Tomstown limestone, Cambrian, West Virginia: Grimsley, 416.
- Torchlight sandstone member, Cretaceous, Wyoming: Lupton, 659.
- Tornado limestone, Carboniferous, Arizona: Ransome, 881.
- Tornillo clays, Cretaceous, Texas: Udden *et al.*, 1107.
- Torrance terrane, Carboniferous, New Mexico: Keyes, 565.
- Torrejon formation, New Mexico: Bauer, 52.
- Torrejon terrane, Tertiary, New Mexico: Keyes, 565.
- Trabuco formation, Cretaceous, California: Packard, 826.
- Travester terrane, Jurassic, Kansas: Keyes, 565.
- Travester terrane, Jurassic, New Mexico: Keyes, 565.
- Travis Peak formation, Cretaceous, Texas: Udden *et al.*, 1107.
- Travis Peak sand, Cretaceous, Texas: Matson, 712.
- Trenton formation, Ordovician, Quebec: Dresser, 313.
- Trenton group, Ordovician, Ontario: Kindle, 577.
- Trenton limestone, Ordovician, New York: Miller, 766.
- Tribune limestone, Mississippian, Kentucky: Ulrich, 1112.
- Trinity division, Cretaceous, Texas: Udden *et al.*, 1107.
- Trinity group, Cretaceous, Texas: Matson, 712.
- Trinity sand, Cretaceous, Louisiana: Matson, 711.
- Troy quartzite, Cambrian(?), Arizona: Ransome, 881.
- Troy sandstone, Cambrian, Arizona: Ransome, 881.
- Truchas terrane, pre-Cambrian, New Mexico: Keyes, 565.
- Trujillo beds, Triassic, Texas: Udden *et al.*, 1107.
- Trujillo terrane, Triassic, Kansas: Keyes, 565.
- Trujillo terrane, Triassic, New Mexico: Keyes, 565.
- Tule beds, Pleistocene, Texas: Udden *et al.*, 1107.
- Tule Spring limestone, Carboniferous, Arizona: Ransome, 881.
- Tusahoma formation, Tertiary, Gulf States: Berry, 63.
- Tuscarora quartzites, Silurian, Pennsylvania: Schuchert, 961.
- Twin Creek limestone, Jurassic, Wyoming: Mansfield, 694.
- Twin Creek sandstone, Jurassic, Idaho: Mansfield, 693.
- Two Medicine formation, Cretaceous, Montana: Stebinger, 1041, 1042.
- Tye granite, Jurassic, Washington: Smith, 1022.
- Tygee sandstone, Cretaceous(?), Idaho: Mansfield and Roundy, 698.
- Uffington shale, Pennsylvanian, West Virginia: Reger, 892.
- Unicoi formation, Cambrian, Tennessee: Jenkins, 514.
- Uniontown limestone, Pennsylvanian, West Virginia: Reger, 892.
- Uniontown sandstone, Pennsylvanian, West Virginia: Reger, 892.
- Upson clays, Cretaceous, Texas: Udden *et al.*, 1107.
- Utica formation, Ordovician, Quebec: Dresser, 313.
- Utica shale, Ordovician, Ohio: Fenneman, 352.
- Utica shales, Ordovician, New York: Foerste, 365.
- Uvalde formation, Pleistocene, Texas: Udden *et al.*, 1107.
- Uvalde formation, Pliocene or Pleistocene, Texas: Deussen and Dole, 289.
- Valencian series, pre-Cambrian, New Mexico: Keyes, 565.
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