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Bibliography of North American Geology, 1957

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Bibliography of North American Geology, 1957

By RUTH REECE KING, VIRGINIA M. JUSSEN, ELISABETH S. LOUD,
and GEORGIANNA D. CONANT

G E O L O G I C A L S U R V E Y B U L L E T I N 1 0 9 5



UNITED STATES DEPARTMENT OF THE INTERIOR

FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

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BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY

1957

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GEORGIANNA D. CONANT

INTRODUCTION

The current annual volume lists publications that appeared during 1957 concerning the geology of the North American continent, including Greenland, the West Indies, and other adjacent islands, and Hawaii, Guam, and other island possessions, but not the trust territories of the United States. A few articles published before 1957, but not included in previous volumes, are cited also. Articles by American authors published in foreign journals are cited if they deal with North American localities or are of a general nature, but not if they deal with foreign areas. Articles by foreign authors on North America are included regardless of place of publication; those of a general nature are included if they appeared in North American journals.

The citations are listed alphabetically by author, with full title and publication data. There follows a subject index to the papers cited. Geologic names in the index are those used by the individual authors, and their listing here does not imply approval by the Geological Survey.

Assistance of Margaret E. Barcroft, Lois F. Idleman, Mildred C. Mead, and Yetta C. Millman in the preparation of this volume is gratefully acknowledged.

The Bibliography of North American Geology comprises the following bulletins: 746-747 (1785-1918), 823 (1919-28), 937 (1929-39), 1049 (1940-49), 985 (1950), 1025 (1951), 1035 (1952-53), 1054 (1954), 1065 (1955), and 1075 (1956).

SERIALS

The following list gives the abbreviated titles of periodicals and serials that have been most commonly cited in this bibliography, the complete titles as listed in library catalogs and in the "Union List of Serials," and the places of publication. Infrequently cited periodicals and serials, and publications that include many articles (such as guidebooks, conferences, congresses, and symposiums), are not listed.

- A.I.M.E., Mining Geology Geophysics Div. Ann. Mtg., Min. Br. Abs.—American Institute of Mining and Metallurgical Engineers, Mining, Geology, and Geophysics Division Annual Meeting, Mining Branch Abstracts. New York.
- A.I.M.E. Trans.—American Institute of Mining, Metallurgical, and Petroleum Engineers Transactions. New York.
- Acta Crystallographica. Copenhagen.
- Ala. Acad. Sci. Jour.—Alabama Academy of Science Journal. Montevallo, Ala.
- Ala. Geol. Survey Inf. Ser.—Alabama Geological Survey Information Series. University, Ala.
- Alberta Research Council Prelim. Rept.—Alberta Research Council, Preliminary Report. Edmonton, Alberta.
- Alberta Soc. Petroleum Geologists Jour.—Alberta Society of Petroleum Geologists Journal. Calgary, Alberta.
- Am. Alpine Jour.—American Alpine Journal. New York.
- Am. Antiquity—American Antiquity. Menasha, Wis.
- Am. Assoc. Petroleum Geologists Bull.—American Association of Petroleum Geologists Bulletin. Tulsa, Okla.
- Am. Ceramic Soc. Bull.; Jour.—American Ceramic Society Bulletin; Journal. Columbus, Ohio.
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- Am. Geophys. Union Trans.—American Geophysical Union Transactions. Washington, D.C.
- Am. Jour. Botany—American Journal of Botany. Baltimore, Md.
- Am. Jour. Sci.—American Journal of Science. New Haven, Conn.
- Am. Midland Naturalist—American Midland Naturalist. Notre Dame, Ind.
- Am. Mineralogist—American Mineralogist. Ann Arbor, Mich.
- Am. Mus. Novitates—American Museum Novitates. New York.
- Am. Petroleum Inst. Rept. Progress—American Petroleum Institute, Report of Progress. Baltimore, Md.
- Am. Philos. Soc. Yearbook—American Philosophical Society Yearbook. Philadelphia, Pa.
- Am. Scientist—American Scientist. Easton, Pa.
- Am. Soc. Civil Engineers Proc. Jour. Hydraulics Div.; Jour. Soil Mechanics and Found. Div.—American Society of Civil Engineers Proceedings Journal of the Hydraulics Division; Journal of the Soil Mechanics and Foundations Division. New York.
- Am. Water Works Assoc. Jour.—American Water Works Association Journal. New York.
- Anal. Chemistry—Analytical Chemistry. Washington, D.C.
- Arctic. Montreal, Quebec.
- Ark. Geol. and Conserv. Comm. Water Res. Circ.—Arkansas Geological and Conservation Commission Water Resources Circular. Little Rock, Ark.
- Asoc. Mexicana Geólogos Petroleros Bol.—Asociación Mexicana de Geólogos Petroleros Boletín. México, D.F.
- Assoc. Am. Geographers Annals—Association of American Geographers Annals. Lawrence, Kans.

- Brigham Young Univ. Research Studies Geology Ser.—Brigham Young University Research Studies Geology Series. Provo, Utah.
- British Columbia Dept. Mines Ann. Rept.; Bull.—British Columbia Department of Mines Annual Report; Bulletin. Victoria, British Columbia.
- Bull. Am. Paleontology—Bulletins of American Paleontology. Ithaca, N.Y.
- Cahiers Géographie Québec—Cahiers de Géographie de Québec. Québec, Québec.
- Calif. Dept. Nat. Res., Div. Mines Bull.; Mineral Inf. Service—California Department of Natural Resources, Division of Mines Bulletin; Mineral Information Service. San Francisco, Calif.
- Calif. Jour. Mines and Geology—California Journal of Mines and Geology. San Francisco, Calif.
- Calif. Oil Fields—California Oil Fields. San Francisco, Calif.
- Calif. Univ. Pubs. Geol. Sci.—California University, Publications in Geological Sciences. Berkeley, Calif.
- Canada Geol. Survey Bull.; Econ. Geology Ser.; Geophysics Paper; Mem.; Paper; Prelim. Ser. Map—Canada Geological Survey Bulletin; Economic Geology Series; Geophysics Paper; Memoir; Paper; Preliminary Series Map. Ottawa.
- Canadian Alpine Jour.—Canadian Alpine Journal. Banff, Alberta.
- Canadian Inst. Mining and Metallurgy Trans.—Canadian Institute of Mining and Metallurgy Transactions. Montreal, Quebec.
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- Eng. Min. Jour.—Engineering and Mining Journal. New York.
- Evolution. Lancaster, Pa.
- Field & Lab.—Field & Laboratory. Dallas, Texas.
- Fieldiana Geology. Chicago, Ill.
- Fla. Acad. Sci. Quart. Jour.—Florida Academy of Sciences Quarterly Journal. Gainesville, Fla.
- Fla. Geol. Survey Inf. Circ.—Florida Geological Survey Information Circular. Tallahassee, Fla.
- Ga. Acad. Sci. Bull.—Georgia Academy of Science Bulletin. Emory University, Ga.
- Ga. Geol. Survey Bull.—Georgia Geological Survey Bulletin. Atlanta, Ga.
- Ga. Mineral Newsletter—Georgia Mineral Newsletter. Atlanta, Ga.
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- Tenn. Acad. Sci. Jour.—Tennessee Academy of Science Journal. Knoxville, Tenn.
- Texas Board of Water Engineers Bull.—Texas Board of Water Engineers Bulletin. Austin, Texas.
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|--------------------------------|---|
| U.S. Geol. Survey | United States Geological Survey |
| Bull. | Bulletin |
| Circ. | Circular |
| Coal Inv. Map | Coal Investigations Map |
| Geol. Quadrangle Map | Geologic Quadrangle Map |
| Geophys. Inv. Map | Geophysical Investigations Map |
| Hydrol. Inv. Atlas | Hydrologic Investigations Atlas |
| Mineral Inv. Field Studies Map | Mineral Investigations Field Studies Map |
| Mineral Inv. Res. Map | Mineral Investigations Resource Map |
| Misc. Geol. Inv. Map | Miscellaneous Geologic Investigations Map |
| Oil and Gas Inv. Map | Oil and Gas Investigations Map |
| Prof. Paper | Professional Paper |
| Water-Supply Paper | Water-Supply Paper. |
| | Washington, D.C. |
- Uranium. Denver, Colo.
- Utah Geol. Mineralog. Survey Bull.—Utah Geological and Mineralogical Survey Bulletin. Salt Lake City, Utah.
- Utah Univ. Anthropol. Papers—Utah University Anthropological Papers. Salt Lake City, Utah.
- Va. Div. Mineral Res. Bull.; Mineral Res. Circ.—Virginia Division of Mineral Resources Bulletin; Mineral Resources Circular. Charlottesville, Va.
- Va. Jour. Sci.—Virginia Journal of Science. Farmville, Va.
- Va. Minerals—Virginia Minerals. Charlottesville, Va.
- Vt. Geol. Survey Bull.—Vermont Geological Survey Bulletin. Montpelier, Vt.
- W. Va. Geol. Survey Rept. Inv.—West Virginia Geological Survey Report of Investigations. Morgantown, W. Va.
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- Washington Acad. Sci. Jour.—Washington Academy of Sciences Journal. Washington, D. C.
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- 338, Mistehae Lake, Alberta.
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- 446, McClelland Lake, Alberta.
- 447, Firebag River, Alberta.
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- 449, Burnt Lakes, Alberta.
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454, Gardiner Lakes, Alberta.
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456, Upper Mikkwa River, Alberta.
457, Raymond Creek, Alberta.
458, Bolton Creek, Alberta.
459, Louise River, Alberta.
460, Eaglenest Lake, Alberta.
462, Marguerite River, Alberta.
463, Reid Creek, Alberta.
464, Coffey Lake, Alberta.
465, Eymundson Creek, Alberta.
466, Ronald Lake, Alberta.
467, Pearson Lake, Alberta.
468, Richardson River, Alberta.
469, Robert Creek, Alberta.
470, Warspite, Alberta.
471, Thorhild, Alberta.
472, Westlock, Alberta.
473, Dapp, Alberta.
474, Perryvale, Alberta.
475, Newbrook, Alberta.
476, Bondiss, Alberta.
477, Athabasca, Alberta.
478, Coolidge, Alberta.
479, Grosmont, Alberta.
480, Sawdy, Alberta.
481, Vincent Lake, Alberta.
482, Cache Lake, Alberta.
483, Goodfish Lake, Alberta.
484, Maloy, Alberta.
485, Pinehurst Lake, Alberta.
486, Beaver Lake, Alberta.
487, Lac la Biche, Alberta.
488, Touchwood Lake, Alberta.
489, Smoky Lake, Alberta.
490, Victor Lake, Alberta.
491, Hylo, Alberta.
492, Horse Lake, Alberta.
493, Pine Creek, Alberta.
494, Apps Lake, Saskatchewan.
495, Kazan Lake, Saskatchewan.
496, Buffalo Narrows, Saskatchewan.
499, Reita Lake, Alberta.
500, Cold Lake, Alberta.
501, Marie Lake, Alberta.
502, Medley River, Alberta.
504, Milnet, Ontario.
505, Lake Timagami, Ontario.
506, Marten Lake, Ontario.
507, Ingall Lake, Ontario.
508, Otfertail Creek, Ontario.
509, Fabre, Quebec-Ontario.
510, Timagami, Ontario.
511, Cobalt, Ontario-Quebec.
512, Ville-Marie, Quebec-Ontario.
513, Angliers, Quebec.
514, Earleton, Ontario-Quebec.
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522, Adam River, Quebec.
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525, Rivière Coigny, Quebec.
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583, Ministkwan Lake, Saskatchewan.
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606, Tusket, Nova Scotia.
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609, Port Mouton, Nova Scotia.
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611, Church Point, Nova Scotia.
612, La Have Islands, Nova Scotia.
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617, Kejimikujik Lake, Nova Scotia.
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- Frontière group, Silurian-Devonian(?), Quebec: Béland, J. R., 2.
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- Green Pond conglomerate, Silurian, New Jersey, discredited: Thomson, A. F., 2.
- Gunflint formation, Precambrian, Ontario: Goodwin, A. M., 1.
- Gunnison volcanic conglomerate, Cretaceous-Paleocene, Colorado: Van Houten, F. B., 2.
- Hay River formation, Devonian, Northwest Territories: Crickmay, C. H.
- Heimbjerge formation, Ordovician, Greenland, new: Cowie, J. W.
- Houy formation, Devonian-Mississippian, Texas, new: Cloud, P. E., Jr., 2.
- Hunton group, Silurian-Devonian, Oklahoma: Amsden, T. W., 2.
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- Ireton shale, Devonian, Alberta: McCrossan, R. G.
- Ironwood iron-formation, Precambrian, Michigan-Wisconsin: Huber, N. K.
- Jackpile sandstone, Jurassic, New Mexico: Schlee, J. S., 2.
- Jangle limestone, Cambrian, Nevada: Johnson, M. S.
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- Kanayut conglomerate, Devonian, Alaska, new: Bowsler, A. L., 1.
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- Knox group, Ordovician, Tennessee: Pierce, T. R.
- Kulthieth formation, Paleocene(?)-Eocene, Alaska: Plafker, G., 1.
- La Caja formation, Jurassic, Mexico: Rogers, C. L.
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- Livingston formation, Cretaceous-Paleocene, Montana: McMannis, W. J.
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- Medill sand, Pleistocene, California: Rodda, P. U., 1.
- Mercury limestone, Mississippian, Nevada: Johnson, M. S.
- Middle Park formation, Paleocene, Colorado: Tweto, O. L.
- Mississagi group, Precambrian, Ontario, redefined: Roscoe, S. M., 2.
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- Molas formation, Pennsylvanian, Colorado Plateau: Wengerd, S. A., 2.
- Moss Lake formation, Silurian, Michigan: Mich. Geol. Soc.
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- Muddy sandstone, Cretaceous, Wyoming: Paull, R. A.
- New Providence formation, Mississippian, Kentucky: Conkin, J. E., 2.
- Niquel formation, Pliocene, California: Vedder, J. G.
- North Park formation, Miocene-Pliocene(?), Colorado: Montagne, J. M. de la, 2.
- Oak Spring formation, Tertiary, Nevada: Johnson, M. S.
- Ocala group, Eocene, Florida, redefined: Puri, H. S., 5.
- Oil Creek formation, Ordovician, Texas: Munchrath, M. A.
- Onaping Volcanic formation, Precambrian, Ontario, Sudbury basin: Williams, Howel, 1.
- Ontelaunee formation, Ordovician, Pennsylvania: Hobson, J. P., Jr.
- Oso member of Capistrano formation, Miocene-Pliocene, California: Vedder, J. G.

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- Owens Valley formation, Permian, California: Merriam, C. W.
- Paradox formation, Pennsylvanian, Colorado Plateau: Matheny, M. L., 2.
- Phosphoria formation, Permian, Montana, facies: Rooney, L. F., 2. Wyoming: King, R. H.; Sheldon, R. P.
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- Pointe aux Chenes shale, Silurian, Michigan: Mich. Geol. Soc.
- Quirke group, Precambrian, Ontario, new: Roscoe, S. M., 2.
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- Retreat group, Triassic(?)-Cretaceous(?), Alaska: Barker, F.
- Rickenbach formation, Ordovician, Pennsylvania: Hobson, J. P., Jr.
- Ridgway conglomerate, Miocene, Colorado: Van Houten, F. B., 2.
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- Salem limestone, Mississippian, Indiana: Pinsak, A. P., 1.
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- Shelter formation, Cretaceous(?), Alaska: Barker, F.
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- Slim Sam formation, Cretaceous, Montana, new: Klepper, M. R., 1.
- Snowy Range formation, Cambrian, Montana, nomenclature: Lochman-Balk, C., 2.
- Solomon sandstone, Cretaceous, Alberta: Lowther, J.
- Souris River formations, Devonian, Saskatchewan: Walker, C. T.
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- Stone City beds, Eocene, Texas: Stenzel, H. B., 1.
- Stone Corral formation, Permian, Kansas: Merriam, D. F., 4.
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- Symonds formation, Cretaceous(?), Alaska: Barker, F.
- Temescal formation, Pleistocene, California: Radbruch, D. H., 1.
- Tepee Trail formation, Eocene, Wyoming, members and facies: Tourtelot, H. A., 1.
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- Tillite formation, Precambrian, Greenland: Sommer, M., 1.
- Tippipah limestone, Pennsylvanian—Permian(?), Nevada: Johnson, M. S.
- Topanga formation, Miocene, California, members: Vedder, J. G.
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- Twin Creek formation, Jurassic, Utah: Hinman, E. E.
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- Vernon shale, Silurian, New York: Fisher, D. W., 2.
- Wachsmuth limestone, Mississippian, Alaska, new: Bowsher, A. L., 1.
- Waits River formation, Devonian(?), Vermont, redefined: Murthy, V. R., 1.
- Waterways formation, Devonian, Alberta, new members: Crickmay, C. H.
- Weisner formation, Cambrian, Georgia: Crawford, T. J., 1.
- Westwater Canyon sandstone member of Morrison formation, Jurassic, units: Zitting, R. T.
- Wolfcamp formation, Permian, New Mexico—Texas: Jarvis, D.

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- Yakataga formation, Miocene—Pliocene(?), Alaska: Plafker, G., 1.
- Yucca Flat formation, Cambrian, Nevada: Johnson, M. S.
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- Escambia County, Tertiary, aquifers: Cagle, J. W., Jr.
- Little Stave Creek, Clark County, Tertiary: Gardner, J. A., 1.
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- Madison County, Ordovician—Recent: Mahmberg, G. T.
- Marengo County, cross sections: Sutcliffe, H., Jr.
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- Montgomery area, Cretaceous, Quaternary, lithology: Powell, W. J.
- Wilcox County: LaMoreaux, P. E.
- Alaska, Robinson Mts., southeastern, Tertiary—Quaternary: Miller, D. J., 1.
- Shainin Lake area, Brooks Range, Devonian—Mississippian type sections: Bowsher, A. L., 1.
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- Kootenay formation, Cretaceous, coal seams, Canmore area: Norris, D. K., 1.

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- Rocky Mts., Upper Devonian: Taylor, P. W.
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- Magnolia oil and gas field, Mesozoic-Cenozoic: Reed, J. Morse.
- Waldron quadrangle, Pennsylvanian: Reinemund, J. A.
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- Crowsnest coal basin, Triassic-Recent: Crabb, J. J., Jr.
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- Fort St. John oil and gas field, Devonian-Cretaceous: Clark, L. M.
- Langley municipality, Quaternary: Halstead, E. C.
- New Westminster area, Quaternary: Armstrong, J. E.
- Phoenix camp, Boundary Creek district, cross sections: Seraphim, R. H.
- California, Alferitz area, Devils Den oil field, cross sections: Ritzius, D. E.
- Belgian Anticline oil field: Park, W. H.
- Contra Costa County, lower Tertiary: Smith, B. Y.
- El Modeno area, Cenozoic: Yerkes, R. F.
- Grindstone and Stony Creeks, Mesozoic, lithology: Crowell, J. C., 1.
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- Kellogg and Sidney shales, Eocene, Mt. Diablo area, correlation: Kanaya, T.
- Manly Peak quadrangle: Johnson, B. K.
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- San Gorgonio Pass, Miocene-Quaternary: Allen, C. R., 1.
- San Joaquin Valley, Cenozoic: Church, H. V., Jr., 1, 2.
- Sierra Nevada, Tertiary: Axelrod, D. I., 1.
- Smith River plain, Del Norte County, Jurassic-Recent: Back, W.
- Tejon embayment, Jurassic-Recent: Carls, J. M.
- Torrance oil field, Jurassic-Recent: Crowder, R. E.
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- West Newport oil field, Miocene-Pliocene: Hunter, A. L.
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- Canada, Appalachian region, correlation chart: Weeks, L. J., 1.
- Cambrian, New Brunswick-Cape Breton-Newfoundland: Weeks, L. J., 1.
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- Interior Plains, Cambrian-Tertiary, correlation chart: Wickenden, R. T. D.
- Maritime Provinces, Carboniferous, correlation chart: Weeks, L. J., 1.
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- Crested Butte measured section, Precambrian-Jurassic: Mallory, W. W.
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- Douglas Creek member of Green River formation, Eocene, Piceance Creek basin: Cline, C. W.
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- Elk Mts., Jurassic, columnar sections: Langenheim, R. L., Jr., 3.
- Front Range, eastern flank and foothills, generations: Boos, C. M., 2.
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- Garfield quadrangle: Dings, M. G.
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- Cross sections: Hunt, C. B., 1.
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- Oil zones, Four Corners correlator: Morrisey, N. S., 2.
- Paradox basin, Cambrian-Cretaceous, chart: Matheny, M. L., 2.
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- Colorado Plateau—Continued**
- San Juan Mts. and Four Corners area, Precambrian-Mississippian: Baars, D. L.
- Connecticut, Guilford quadrangle and Branford area: Mikami, H. M.
- Delaware, Coastal Plain, Cretaceous-Tertiary:** Richards, H. G.
- New Castle County: Ward, R. F.
- Cross sections: Rasmussen, W. C., 2.
- Florida, Brevard County, Eocene-Recent, aquifers:** Brown, D. W.
- Ocala group, Eocene, cross sections: Puri, H. S., 5.
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- Ole Rømers Land and Hudson Land, Devonian fault zone, cross section: Büttler, H.
- Gulf Coastal Plain, eastern, Eocene-Oligocene, correlation chart:** Cheetham, A. H.
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- Leesburg quadrangle, structure sections and stratigraphic column, generalized: Shockey, P. N.
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- Beardstown-Glasford-Havana-Vermont quadrangles, Cambrian-Pennsylvanian and Pleistocene: Wanless, H. R., 1.
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- Grundy-Kendall Counties, limestone and dolomite beds: Ostrom, M. E., 1.
- Pennsylvanian sandstones: Siever, R., 3.
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- Parke County, Mississippian-Pennsylvanian: Wier, C. E.
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- Osage and Meramec series, Mississippian, cross sections: Pinsak, A. P., 1.
- Iowa, Catfish Creek area, Ordovician-Silurian:** Brown, C. E.
- Klein quarry, Devonian section: Michael, R. D.
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- Kansas, Abilene anticline, Precambrian-Permian:** Shenkel, C. W., Jr.
- Chautauqua arch, western flank, cross section: Morgan, F. W.
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- Ladder Creek area, Cretaceous-Quaternary: Bradley, E., 2.
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- Western, Mesozoic, correlation sections: Merriam, D. F., 2.
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 Jackson Mts., Cretaceous-Tertiary: Willden, C. R.
 New Mexico, Ambrosia Lake area: Zitting, R. T.
 Carlsbad Caverns: Hayes, P. T., 1.
 Delaware basin: Barnes, C. E.
 Nacimiento Mts. and San Juan Basin: Parker, J. W.
 Raton basin: Osborne, H. W., 1.
 Southeastern: Stipp, T. F., 2.
 Zuni Mts.: Smith, C. T., 1.
 New York, Allegany County: Muller, E. H., 1.
 North Carolina, Castle Hayne limestone, Eocene-Recent: LeGrand, H. E., 3.
 Northwest Territories, Eureka area, Ellesmere and Axel Heiberg Islands: Thorsteinsson, R.
 Ohio, Precambrian-Mississippian: Green, D. A.
 Oklahoma, Criner Hills area: Lang, R. C., 3d.
 Maysville area: Withrow, P. C.
 Prague area, Pennsylvanian-Permian: Masters, K. E.
 Ontario, Cochenour Willans gold mines, structure and ore deposition: Kuryliw, C. J.
 Sudbury basin: Thomson, J. E., 2.
 Precambrian volcanism: Williams, Howel, 1.
 Oregon, Bend quadrangle: Williams, Howel, 2.
 Cascade Range, central: Williams, Howel, 2.
 Panama, Canal Zone: Woodring, W. P., 1.
 Pennsylvania, Philadelphia area: Watson, E. H.
 South Dakota, Oahe dam site, Pierre shale: Underwood, L. B.
 Texas, Delaware basin: Barnes, C. E.
 Grayson County: Bradfield, H. H., 1.
 Panhandle: Roth, R. I.
 Utah, Bear Lake region, Boy Scout Camp Hunt area, popular: Hardy, C. T., 1.
 East Tintic Mts.: Morris, H. T.
 Jordan Narrows quadrangle: Pitcher, G. G.
 Pine Valley Mts.: Cook, E. F., 2.
 Uinta Basin: Preston, D. A.
 Tectonics: Crowley, A. J.
 Zion and Bryce Canyon National Parks, popular: Gregory, H. E.

Geologic history—Continued

- Virginia, York-James peninsula: Bevan, A. C.
 Wyoming: Thomas, Horace D., 1.
 Beartooth Mts., Quad Creek area: Eckelmann, F. D., 1.
 Deadman Butte area: Woodward, T. C.
 Saratoga Valley area: Montagne, J. M. de la, 1.
 Summary, address: Thomas, Horace D., 2.
 Yellowstone National Park: Vuagnat, M. B.
 Zoogeographic evidence: Darlington, P. J., Jr.
 Geologic mapping. *See also* Technique, Mapping.
 Field and mine, abbreviations, lists: Chace, F. M.
 Geologic field methods, manual: Low, J. W.
 Photogrammetric: Bayless, J. C.
 Stereostuctural contouring: Shearer, E. M., 2.
 Geologic maps. *See also* subheading *Geologic maps* under the states and countries; Maps, *Photogeologic*.
 Alabama, Choctaw County: Toulmin, L. D., Jr.
 Escambia County: Cagle, J. W., Jr.
 Indian Mtn. area: Crawford, T. J., 1.
 Lowndes County: Scott, John C.
 Madison County: Malmberg, G. T.
 Monroeville area: Ivey, J. B.
 Piedmont area: Baker, J.
 Wilcox County: LaMoreaux, P. E.
 Alaska: Dutro, J. T., Jr., 1.
 Baranof Island pegmatite deposits, sketch: Sainsbury, C. L., 1.
 Cleveland Peninsula, sketch: Sainsbury, C. L., 2.
 Fort Greely area: Holmes, G. W.
 Juneau (B-3) quadrangle: Barker, F.
 Kateel River quadrangle: Cass, J. T.
 Malaspina district, reconnaissance: Plafker, G., 1.
 Nulato and Kateel Rivers area: Bickel, R. S.
 Robinson Mts., southeastern, Tertiary-Quaternary: Miller, D. J., 1.
 Shainin Lake area, Brooks Range: Bowsher, A. L., 1.
 Sitklan Island area pegmatite deposits, sketch: Sainsbury, C. L., 1.
 Yukon-Kuskokwim delta area: Conrad, W. L.
 Alberta, Adams Lookout area: Canada G. S., 18.
 Canmore area: Norris, D. K., 1.
 Drumheller area: Canada G. S., 25.
 Grande Cache area: Canada G. S., 3.
 High River area: Canada G. S., 26.

Geologic maps—Continued

Alberta—Continued

- Sedgewick district, glacial: Gravenor, C. P., 1.
- Arizona, Agathla Peak quadrangles: Witkind, I. J., 5-8.
- Boot Mesa quadrangles: Witkind, I. J., 1-4.
- Chuska Mts., volcanic centers: Appledorn, C. R.
- Cochise Head and Vanar quadrangles: Sabins, F. F., Jr., 2.
- Harquahala Plains area: Metzger, D. G.
- Maricopa County: Wilson, Eldred D., 1.
- Arkansas, Lonoke-Prairie-White Counties: Counts, H. B.
- Northwestern, paleogeologic, pre-Mississippian: Caplan, W. M.
- Waldron quadrangle: Reinemund, J. A.
- British Columbia, Anahim Lake area: Canada G. S., 23.
- Antler Creek area, Cariboo district: Sutherland Brown, A., 1.
- Bennett area: Canada G. S., 29.
- Cariboo district, northeastern: Sutherland Brown, A., 3.
- Coal Mtn.: Canada G. S., 8.
- Iron Mask batholith, Kamloops area: British Columbia Dept. Mines.
- Jervis Inlet area: Bacon, W. R., 1.
- Kettle River, east half: Canada G. S., 19.
- Langley municipality, surficial: Halstead, E. C.
- Lardeau area, east half: Canada G. S., 24.
- Nelson area: Canada G. S., 7.
- New Westminster area, surficial: Armstrong, J. E.
- Pacific Nickel mines: Aho, A. E.
- Pitt Lake area: Canada G. S., 11.
- St. Mary Lake area: Canada G.S., 27.
- Southwestern, limestone deposits: Mathews, W. H., 1.
- Stikine River area: Canada G.S., 22.
- Terrace area: Canada G.S., 13.
- California, Alturas pumice area: Chesterman, C. W.
- Blind Spring Valley-Yellowjacket Spring pumice area: Chesterman, C. W.
- Casa Diablo Mtn. quadrangle: Rinehart, C. D.
- Cima dome, Mojave Desert, surficial: Sharp, R. P., 1.
- Coso pumice area: Chesterman, C. W.
- Ebbetts Pass region, Tertiary: Wilshire, H. G.
- El Modeno area: Yerkes, R. F.
- Island Mtn. copper mine area: Stinson, M. C.

Geologic maps—Continued

California—Continued

- Last Chance Canyon area: Chesterman, C. W.
- Los Angeles basin, northwestern, gravity correlation: McCulloh, T. H.
- Manly Peak quadrangle: Johnson, B. K.
- Medicine Lake area: Chesterman, C. W.
- Mono Craters pumice area: Chesterman, C. W.
- Napa pumice area: Chesterman, C. W.
- Oakland West quadrangle: Radbruch, D. H., 1.
- Outline, lead-zinc distribution: Goodwin, J. G., 1.
- Pittsburg pumice area: Chesterman, C. W.
- Redding area, Cretaceous: Geol. Soc. Sacramento.
- San Geronio Pass area: Allen, C. R., 1.
- San Joaquin Hills-San Juan Capistrano area: Vedder, J. G.
- Smith River plain, Del Norte County: Back, W.
- Canada: Stockwell, C. H.
- Central America, general, and mine areas: Roberts, R. J.
- Colorado, Caribou area: Moore, F. B.
- Colorado-Big Thompson project area: U.S. Bur. Reclamation, 2.
- Corral Peak area: Austin, E. B.
- Elk Mtn. anticline: York, H. F.
- Front Range, eastern flank and foothills, structural units: Boos, C. M., 2.
- Garfield quadrangle: Dings, M. G.
- Gateway district, western: Eicher, L. J.
- Golden quadrangle: Van Horn, R., 1.
- Granby anticline: Sanders, R. J.
- Hot Sulphur Springs area: Shearer, E. M., 1.
- Independence Mtn. area: Walters, Richard F.
- Michigan River, Middle Fork area: Ward, D. E.
- Middle Park, sketch: Tweto, O. L.
- Mt. Peale 1 SE quadrangle: Carter, W. D., 1.
- North Park-Middle Park basin: Rocky Mtn. Assoc. Geologists, 2.
- North Park-Saratoga Valley area: Montagne, J. M. de la, 1, 2.
- Northgate district, Precambrian: Steven, T. A., 1.
- Ouray area: Kelley, V. C., 5.
- Pass Creek area, Middle Park: Rocky Mtn. Assoc. Geologists, 2.
- Red Dirt Creek area, Middle Park: Jenkins, M. A., Jr.
- San Juan Mts.: N. Mex. Geol. Soc., 2.

Geologic maps—Continued

Colorado—Continued

- Sentinel Peak NW quadrangle: Ekren, E. B.
 Starkville-Weston area: Wood, G. H., Jr.
 Colorado Plateau, Grand Wash trough: Hunt, C. B., 1.
 Navajo country, Triassic-Jurassic, sketch: Harshbarger, J. W.
 Connecticut, Cherry Brook valley: Platt, J. N., Jr.
 Guilford quadrangle and Branford area: Mikami, H. M.
 Delaware, New Castle County: Rasmussen, W. C., 2; Ward, R. F.
 Georgia, Indian Mtn. area: Crawford, T. J., 1.
 Webster County, Clayton iron ores: Furcron, A. S.
 Greenland, Albert Heims Bjergereservatet area: Cowie, J. W.
 East-central, Cambrian-Ordovician: Cowie, J. W.
 Ella Ø: Cowie, J. W.
 Grandjeans Fjord-Bessels Fjord: Sommer, M., 2.
 Lyells Land: Sommer, M., 1.
 Guatemala, Alotepeque and Chiantla-San Sebastián districts: Roberts, R. J.
 Gulf of Mexico, paleogeologic: Lyons, P. L., 2.
 Honduras, Agalteca area: Roberts, R. J.
 Idaho, Baker quadrangle: Anderson, A. L.
 Boise Valley: Nace, R. L.
 Bruneau-Grand View area, generalized: Littleton, R. T., 1.
 Latah County: Hubbard, C. R.
 Leesburg quadrangle, reconnaissance: Shockey, P. N.
 Snowdrift Mtn. quadrangle: Cressman, E. R.
 Twin Falls-Pocatello area, generalized: Crosthwaite, E. G.
 Illinois, Beardstown quadrangle: Wanless, H. R., 1.
 Glasford quadrangle: Wanless, H. R., 1.
 Havana quadrangle: Wanless, H. R., 1.
 Kendall-Grundy Counties, bedrock, sketch: Ostrom, M. E., 1.
 South-central, aquifers, sketch: Selkregg, L. F.
 Vermont quadrangle: Wanless, H. R., 1.
 Indiana: Ind. G. S.
 Southwestern, Salem limestone, Mississippian: Pinsak, A. P., 1.
 Iowa, Catfish Creek area: Brown, C. E.
 Jamaica: Zans, V. A.
 Kansas, generalized: Tolsted, L. L.
 Ladder Creek area, surficial: Bradley, E., 2.

Geologic maps—Continued

- Kentucky, Campton quadrangle: Briggs, R. P.
 Paducah area: Pree, H. L., Jr.
 White Oak quadrangle: Adkison, W. L.
 Labrador, Seal Lake area, Seal and Croteau groups, Precambrian: Fahrig, W. F.
 Louisiana, Evangeline-St. Landry Parishes: Varvaro, G. G.
 Maine, Sagadahoc Bay tidal flat, Georgetown: Bradley, W. H., 2.
 Manitoba, Chipewyan Lake-Herb Lake area: Quinn, H. A.
 Lynn Lake area: Ruttan, G. D.
 Nor-Acme gold mine, Snow Lake area, surface: Hogg, N.
 Ryerson Lake-Winnipeg River area: Davies, J. F.
 Shatford Lake-Winnipeg River area: Davies, J. F.
 Snow Lake-Herb Lake area: Russell, G. A.
 Split Lake area: Canada G. S., 12.
 Maryland, Great Valley: Sando, W. J.
 Massachusetts, Mt. Holyoke quadrangle, Triassic and Quaternary: Balk, R., 2.
 Mexico, Baja California, central, geonostic: Arnold, B. A.
 Boleo copper district, Baja California: Wilson, I. F.
 Canoas quicksilver district, Zacatecas: Gallagher, D.
 Chiapas-Oaxaca, southern: Webber, B. N.
 Chihuahua and environs: Ramírez M., J. C.
 Concepción del Oro district: Rogers, C. L.
 Durango tin deposits: Smith, Ward C.
 México, D. F., to Acapulco, Guerrero: Fries, C., Jr.
 México, D. F., to Tehuantepec, Oaxaca: Internat. Geol. Cong. Mexico, 1.
 Oaxaca de Juárez to Natividad, Oaxaca, sketch: Bonillas, Y. S.
 Zimapán mining district, Hidalgo: Simons, F. S.
 Michigan, Upper Peninsula, sketch: Mich. Geol. Soc.
 Minnesota, Beltrami-Clearwater Counties: Meuschke, J. L., 3.
 Beltrami-Lake of the Woods Counties: Meuschke, J. L., 2.
 Cuyuna district, North range, bedrock: Schmidt, Robert G.
 Fillmore County: Weiss, M. P., 1.
 Koochiching County: Meuschke, J. L., 4-7.
 Lake of the Woods-Roseau Counties: Meuschke, J. L., 1.
 Missouri, Bowling Green quadrangle: Laswell, T. J., 1.

Geologic maps—Continued

- Montana, Beartooth Mts., Quad Creek area: Eckelmann, F. D., 1.
 Boulder batholith and vicinity: Jarrard, L. D.
 Bridger Range: McMannis, W. J.
 Centennial Mtn. quadrangle: Stewart, D. B.
 Clancy quadrangle, south half: Klepper, M. R., 1.
 Crazy Mtn. basin: Billings Geol. Soc.
 Devils Fence quadrangle: Klepper, M. R., 1.
 Laredo quadrangle: Pecora, W. T., 1.
 Livingston area: Richards, P. W., 1.
 Lower Marias irrigation project area: Swenson, F. A., 2.
 Missoula County: Sahinen, U. M., 1.
 Pryor Mts.: Jarrard, L. D.
 Ravalli County: Sahinen, U. M., 1.
 Shambo quadrangle: Kerr, J. H.
 Tobacco Root Mts.: Reid, R. R., 1.
 Warrick quadrangle: Pecora, W. T., 2.
 Nebraska, Lodgepole Creek valley: Bjorklund, L. J., 1.
 Nevada, Atomic Energy Commission proving grounds area: Johnson, M. S.
 Elko County, mining districts: Granger, A. E., 1.
 Reconnaissance: Granger, A. E., 1.
 Gabbs and vicinity: Vitaliano, C. J., 1.
 Mt. Washington-Lincoln Peak area, Snake Range: Drewes, H. D., 1.
 New Brunswick, Burtts Corner area, west half: Canada G. S., 20.
 Fredericton area, surficial: Lee, H. A., 1.
 New Jersey, Coastal Plain: Dorf, E.
 Delaware Valley, Triassic: Johnson, M. E., 1.
 Ogdensburg region, Precambrian: Geol. Soc. America.
 New Mexico, Ambrosia Lake area: Birdseye, H. S.
 Carlsbad Caverns East quadrangle: Hayes, P. T., 1.
 Cerrillos area: Disbrow, A. E., 1.
 Chuska Mts., volcanic centers: Apple-dorn, C. R.
 Clayton area: Baldwin, B., 2.
 Dog Springs quadrangle: Givens, D. B.
 Dwyer quadrangle: Elston, W. E.
 Laguna 4 quadrangles: Moench, R. H., 1, 2.
 Luera Spring quadrangle: Willard, M. E., 1.
 Northwestern: Dane, C. H., 3.
 Pelican area, Palomas district: Jahns, R. H., 1.
 Piñonville quadrangle: Willard, M. E., 2.

Geologic maps—Continued

- New Mexico—Continued
 Puertecito quadrangle: Tonking, W. H.
 Questa quadrangle: McKinlay, P. F.
 Sangre de Cristo Mts.: N. Mex. Geol. Soc., 1.
 San Juan Basin: Four Corners Geol. Soc.; O'Sullivan, R. B.
 Satan Pass-Thoreau area: Four Corners Geol. Soc.
 Stendel perlite deposit: Weber, R. H.
 Torrance County: Smith, R. E.
 New York, Brier Hill quadrangle: Dietrich, R. V., 2.
 Chazy-Rouses Point area: Stone, D. S.
 Copake quadrangle: Weaver, J. D.
 Kinderhook quadrangle: Craddock, J. C.
 Putnam County, bedrock: Grossman, I. G.
 Pyrite prospects, St. Lawrence and Jefferson Counties: Prucha, J. J.
 Newfoundland, Betts Cove-Tilt Cove area: Neale, E. R. W.
 Conche-Northern Grey Island area: Baird, D. M., 1.
 Dildo area: Canada G. S., 14.
 Gander Lake area, east half: Canada G. S., 17.
 Gander River area: Cooper, G. E., 2.
 Port aux Choix-Castor River area: Woodard, H. H., 1.
 Red Indian Lake area: Canada G. S., 21.
 St. Lawrence fluorite district, sketch: Williamson, D. H.
 Stephenville area: Canada G. S., 16.
 Nicaragua: Nicaragua Servicio Geol. Nac.
 Palacaguina area: Zoppis Bracci, L., 1.
 North Dakota, paleogeologic, pre-Mesozoic: Anderson, S. B.
 Northwest Territories, Ellef Ringnes Island: Heywood, W. W.
 Ellesmere Island, north coast: Christie, R. L.
 Mackenzie District, eastern: Wright, G. M.
 Richardson Mts., sketch: Gabrielse, H., 1.
 Snowbird Lake area: Canada G. S., 10.
 Tumi Lake area: McGlynn, J. C.
 Nova Scotia: Cameron, H. L., 1.
 Kennetcook area: Canada G. S., 6.
 Shubenacadie area, surficial: Hughes, O. L.
 Whyocomagagh area, Cape Breton Island: Canada G. S., 28.
 Ohio, central lake plains area: Ohio Acad. Sci. Geology Sec., 2.
 Oklahoma: Miser, H. D.
 Ardmore basin, southern: Ardmore Geol. Soc.

Geologic maps—Continued

Oklahoma—Continued

- Carter area, Permian and Quaternary: Scott, G. L., Jr.
 Criner Hills area: Ardmore Geol. Soc.; Frederickson, E. A., 1.
 Edmond area, pre-Pennsylvanian: Benoit, E. L.
 Limestone Hills area, Wichita Mts.: Hill, J. W.
 Paleogeologic, Criner Hills axis, pre-Atokan: Ardmore Geol. Soc.
 Prague area, sketch: Masters, K. E.
 Wichita Mtn. region: Panhandle Geol. Soc.
- Ontario, Beatty and Munro Townships, asbestos areas, sketch: Hendry, N. W.
 Caribou Lake intrusion: Friedman, G. M., 2.
 Frood-Stobie mine, Sudbury area: Zurbrigg, H. F.
 Haliburton-Bancroft area: Ontario Dept. Mines, 2.
 Hislop Township: Prest, V. K., 1.
 Lindsay-Peterborough area, surficial: Gravenor, C. P., 2.
 Manitoulin Island: Canada G. S., 30.
 North York Township, Pleistocene: Watt, A. K., 2.
 Southwestern, sketch: Sanford, B. V., 2.
 Sudbury basin area: Thomson, J. E., 2.
- Oregon, Bald Mtn. batholith: Taubeneck, W. H., 1.
 Bend quadrangle: Williams, Howel, 2.
 Cascade Range, central: Williams, Howel, 2.
 Portland quadrangle: Trimble, D. E.
- Panama, Canal Zone: Woodring, W. P., 1.
- Pennsylvania, Delaware Valley, Triassic: Johnson, M. E., 1.
 Hidden Valley Boy Scout Camp area: Miller, J. T.
 Philadelphia area, sketch: Watson, E. H.
- Puerto Rico: Kaye, C. A., 2.
 Generalized: Guillou, R. B., 1.
 Mayaguez area: Mattson, P. H.
- Quebec: Quebec Dept. Mines.
 Beetz Lake area: Grenier, P. E., 1.
 Béraud-Mazérac area: Freeman, P. V., 1.
 Bilson Lake area: Bergeron, R., 2.
 Bones Lake area: Bérard, J.
 Brochant-De Bonnard area: Bergeron, R., 1.
 Cambrian Lake area: Roscoe, S. M., 3.
 Cape Smith-Wakeham Bay belt: Bergeron, R., 2.
 Chibougamau area, sketch: Graham, R. B., 2.
 Coaticook-Malvina area: Cooke, Harold C., 1.

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Quebec—Continued

- Darlens-Chabert area: Freeman, P. V., 2.
 De Freneuse Lake area: Sauvé, P.
 Doncaster area: Klugman, M. A., 1.
 Duquet area: Deland, A. N.
 Eastern Metals mine area: Béland, J. R., 2.
 Guercheville-Lapparent area: Remick, J. H., 3d.
 Hainaut-Champagne area: Lyall, H. B.
 Johan Beetz area: Cooper, G. E., 1.
 Labrador Trough, generalized: Fahrig, W. F.
 Lacolle area: Stone, D. S.
 Lesueur Township: Graham, R. B., 1.
 Litchfield-Huddersfield area: Kretz, R. A., 1.
 Loïs Lake area, preliminary: Lee, B.
 McOuat-Gauvin area: Sater, G. S.
 Manitou Lake area: Jenkins, J. T., 1.
 North of 50th parallel: Gilbert, J. E. J.
 Oka area: Maurice, O. D., 3.
 Pontefract-Gillies area: Kretz, R. A., 3.
 Preston-Gagnon area: Pollock, D. W. T.
 Rosaire-St. Pamphile area: Béland, J. R., 2.
 St. Étienne de Bolton area: Romer, H. S. de.
 St. Magloire area: Béland, J. R., 2.
 Ste. Félicité-Grosses Roches area, Ordovician: Béland, J. R., 1.
 St.-Sylvestre area: Benoit, F.-W.
 Southeastern, asbestos belt: Riordon, P. H., 1.
 Thetford-Disraeli area: Riordon, P. H., 5.
 Thorne-Leslie-Clapham area: Kretz, R. A., 2.
 Vienne area: Gillett, L. B.
 Woburn area, Paleozoic: Marleau, R.-A., 1.
- Rhode Island, Slocum quadrangle, surficial: Power, W. R., Jr.
- Saskatchewan, Charlebois Lake area: Mawdsley, J. B., 1.
 Cypress Hills, Frenchman formation, Cretaceous, distribution: Kupsch, W. O.
 Hanson Lake area: Byers, A. R., 2.
 Manawan Lake area: Kirkland, S. J. T.
 Moose Point anomaly: Pearson, W. J., 2.
 Uranium City area: Canada G. S., 15; Tremblay, L. P., 1, 2.
- South Dakota, Black Hills: King, J. W.
 Crow Creek-Sand Lake area, surficial: Koopman, F. C.
 Flint Hill quadrangle: Bell, H., 3d, 1-6.

Geologic maps—Continued

South Dakota—Continued

- Hoven-Bowdle area, glacial outwash: Lee, K.-Y.
 Long Mtn. area: Braddock, W. A.
 Minnekahta quadrangle: Wilmarth, V. R., 1-4.
 Parker-Centerville outwash: Tipton, M. J.
 Peerless pegmatite, Keystone district: Sheridan, D. M.
 Tennessee, Pioneer quadrangle: Englund, K. J.
 Texas, Alpine area: Littleton, R. T., 2.
 Anderson-Milligan area: Russell, W. L., 2.
 Blanco and Gillespie Counties: Barnes, V. E., 2.
 Bluff Creek and King Creek areas: Abilene and Fort Worth Geol. Socs.
 Burleson County, southeastern: Russell, W. L., 2.
 Cherokee Creek area: Abilene and Fort Worth Geol. Socs.
 Connor Ranch area: Abilene and Fort Worth Geol. Socs.
 Ferris quadrangle: Reaser, D. F.
 Glass Mts.: West Texas Geol. Soc.
 Goliad County: Dale, O. C.
 Karnes County area: Eargle, D. H.
 Midlothian quadrangle: Read, L. C.
 Morgan Creek area: Barnes, V. E., 1.
 Parker County: Hendricks, C. L.
 Rough Creek area: Abilene and Fort Worth Geol. Socs.
 Tarrant County: Leggat, E. R., 2.
 Wilson County: Anders, R. B.
 Trinidad, Ciperio formation, Oligocene-Miocene, type section: Bolli, H. M., 4.
 Utah: Brigham Young Univ. Dept. Geology.
 Clay Basin quadrangle: Hansen, W. R., 1.
 East Tintic mining district, subsurface: Bush, J. Bernard, 1.
 East Tintic Mts. and Tintic mining districts: Utah Geol. Soc.
 Fivemile Pass quadrangle: Disbrow, A. E., 3.
 Gateway district: Eicher, L. J.
 Jordan Narrows quadrangle: Pitcher, G. G.
 Loa quadrangles: Smith, J. F., Jr., 1-3.
 Main Tintic mining district: Cook, Douglas R.
 Marysvale area: Kerr, P. F., 3.
 Mt. Peale quadrangles: Carter, W. D., 1, 2.
 Notom quadrangles: Smith, J. F., Jr., 4-16.
 Pine Valley Mts.: Cook, E. F., 2.
 Spanish Fork Peak quadrangle: Rawson, R. R.

Geologic maps—Continued

Utah—Continued

- Temple Mtn. uranium area, collapse features: Kerr, P. F., 2.
 Uinta Basin: Intermountain Assoc. Petroleum Geologists.
 Uinta Mts., eastern, Precambrian: Hansen, W. R., 3.
 White Canyon uranium district, sketch: Dahl, H. M.
 Vermont, Champlain Valley, Ordovician: Hawley, D.
 East Barre quadrangle: Murthy, V. R., 1.
 Hyde Park quadrangle, bedrock: Albee, A. L.
 Isle La Motte and South Hero Island, Ordovician: Erwin, R. B.
 Virginia, Clifton Forge iron district: Lesure, F. G.
 Gossan Lead district: Stose, A. I. J.
 Washington, Doty-Minot Peak area: Pease, M. H., Jr.
 Kitsap County: Sceva, J. E.
 Portland quadrangle: Trimble, D. E.
 Stevens County magnesite belt: Campbell, I., 1.
 Turtle Lake quadrangle: Becraft, G. E.
 West Indies, Bonaire: Westermann, J. H.
 West Virginia, Morgantown area: Geol. Soc. America Southeastern Sec.
 Williston basin area, paleogeologic, pre-Mesozoic: Francis, D. R.
 Wisconsin: Wis. Nat. Res. Comm. State Agencies.
 Door Peninsula, Pleistocene: Thwaites, F. T.
 Outagamie County: LeRoux, E. F.
 Wyoming, Beartooth Mts., Quad Creek area: Eckelmann, F. D., 1.
 Black Hills: King, J. W.
 Conant Creek area and vicinity: Berg, R. R.
 Deadman Butte area: Woodward, T. C.
 Du Noir area: Keefer, W. R., 1.
 Gas Hills area: Erickson, E. C.; Zeller, H. D.
 Goshen County: Rapp, J. R.
 Heart Mtn. Division, Shoshone irrigation project: Swenson, F. A., 1.
 Heart Mtn. and South Fork thrusts, generalized: Pierce, W. G.
 Hulett Creek uranium mining area: Robinson, C. S., 1.
 Kaycee project area: Kohout, F. A.
 Laramie Range, southern, anorthosite areas: Newhouse, W. H.
 Powder River basin, southeastern: Dobbin, C. E.
 Pumpkin Buttes area: Sharp, W. N.
 Saratoga Valley area: Montagne, J. M. de la, 1.

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Wyoming—Continued

Spotted Horse coal field: Olive, W. W., 1.

Tisdale anticline area: Richardson, E. E.

Wind River basin area: Tourtelot, H. A., 1; Van Houten, F. B., 1; Wyo. Geol. Assoc.

Yukon: Bostock, H. S., 2.

Galena Hill area: Boyle, R. W., 1.

Keno Hill-Galena Hill area: Boyle, R. W., 3.

Mayo Lake area: Canada G. S., 9.

Richardson Mts., sketch: Gabrielse, H., 1.

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Ohlomytherium septentrionale, Pleistocene, Texas: James, G. T.

Dasyus bellus, Pleistocene, Florida, Mefford Cave: Auffman, W., 4.

Dimohyus hollandi, Miocene, Texas, Coastal Plain: Wilson, J. A.

Equidae, Pleistocene, Texas, cf. Old World: Quinn, J. H., 2.

Eremotherium, Pleistocene, Panama: Gazin, C. L., 1.

Evolution, geographical history, paleoecology: Darlington, P. J., Jr.

Mammalia—Continued

Florida, Alachua County, Pleistocene faunas: Bader, R. S.

Miocene-Recent, biotic relations: Sherman, H. B.

Horse bones, late Pleistocene, Utah, Juke Box Cave: Skinner, M. F.

Leptarctus, Miocene, Florida: Olsen, S. J., 2.

Leptochoeridae, Oligocene-Miocene, South Dakota: Macdonald, J. Reid, 2.

Man, associated mammals, North America: Wormington, H. M.

Marine, paleoecology, bibliography: Kellogg, R., 2.

Mastodons, Pleistocene, Tennessee, Island 85 site, Tipton County: Williams, S.

Pleistocene, United States, Archaic middens?: Williams, S.

Mephitis ancipidens, Miocene, Florida, Thomas Farm: Olsen, S. J., 1.

Mexico, Tepexpan, elephants and fossil man, popular account: de Terra, H.

Montana, Deer Lodge local fauna, Pliocene, paleoecology: Konizski, R. L.

Nebraskomys mcgrewi, Pleistocene, Nebraska, Sand Draw fauna: Hibbard, C. W., 2.

Notharctus, middle Eocene, Wyoming, southwestern: Robinson, P., 1.

Ogmodontomys sawrockensis, Pliocene, Kansas: Hibbard, C. W., 2.

Oklahoma, Ogallala group, Pliocene, Ellis County: Kitts, D. B., 1.

Orohippus, Eocene, Wyoming, Bridger formation, Bridger Basin: Kitts, D. B., 2.

Patriofelis ulta, Eocene, Wyoming, Bridger formation: Gazin, C. L., 2.

Peromyscus cf. *leucopus*, Pleistocene, Texas, Friesenhahn Cave: Tamsitt, J. R.

Porpoises, Miocene, Maryland, Calvert formation: Kellogg, R., 1.

Primates, brain evolution: Harman, P. J.

Evolution: Clark, W. E. L. Relationships: Scheele, W. E.

Shrews, Pliocene-Pleistocene, United States: Hibbard, C. W., 1.

United States, archaeological sites, Pleistocene faunas: Jelinek, A. J.

Wyoming, Bison basin. Paleocene: McGrew, P. O.

Man, fossil.

Brain evolution: Harman, P. J. California, Pleistocene lake terraces: Simpson, R. D.

San Diego area, Pleistocene dating, evidence: Carter, G. F., 1.

Man, fossil—Continued

- Evolution : Scheele, W. E. ; Wehner, J. S.
 Geographical history, paleoecology :
 Darlington, P. J., Jr.
 General : Boule, M.
 Mexico, Tepexpan man, popular ac-
 count : de Terra, H.
 Neanderthal and *Homo sapiens*, rela-
 tion : Weckler, J. E.
 Nevada, Vegas Wash : Simpson, R. D.
 New Mexico, Folsom-Sandia specimens,
 Sandia Cave : Hibben, F. C.
 New York, Staten Island, Folsom
 points : Burgher, E. R.
 North America : Wormington, H. M.
 Pleistocene, Ice Age theories : Sauer,
 C. O.
 Popular and elementary : Place, R.
 Primates, evolution : Clark, W. E. L.
 Relation to other primates : Scheele,
 W. E.
 Tooth eruption sequence : Garn, S. M.
 United States, artifacts, correlation
 with Pleistocene faunas :
 Jelinek, A. J.
 Wyoming, Finley site artifacts : Sat-
 terthwaite, L.

Manganese.

- Arizona, Artillery Mts. area : Kumke,
 C. A.
 Central America : Roberts, R. J.
 Honduras : Roberts, R. J.
 Maine, Dudley deposit : Ellertsen, N. A.
 Mexico, Lucifer mine, Baja California,
 origin : Nishihara, H., 1.
 Minnesota, Chisholm area, ramsdellite :
 Klingsberg, C., 1.
 Montana, Butte district, oxidation and
 enrichment : Allsman, P. L.
 New Brunswick, Woodstock area : Mon-
 ture, G. C. ; Sidwell, K. O. J.
 New Mexico, Luis Lopez district, hydro-
 thermal zoning of lead : Jicha,
 H. L., Jr.
 Nicaragua, Terrabona and Matagalpa
 areas, possibilities : Z o p p i s
 Bracci, L., 2.
 Panama : Roberts, R. J.
 Sedimentary deposits, origin, separation
 from iron : Krauskopf, K. B., 1.
 Origin, types : Park, C. F., Jr., 3.
 Virginia, Appalachian area : Sears, C. E.,
 Jr., 1.

Manitoba.

- Aeromagnetic maps, 550, Seal River
 area, anomaly : Canada G.S.,
 5.
 628, Nichol Lake area : Canada
 G.S., 4.
 629, Lovat Lake area : Canada G.S., 4.
 630, Wither Lake area : Canada
 G.S., 4.
 631, Meades Lake area : Canada
 G.S., 4.
 632, Quinn Lake area : Canada G.S., 4.

Manitoba—Continued

Aeromagnetic maps—Continued

- 633, Steel River area : Canada G.S., 4.
 634, Knights Hill area : Canada
 G.S., 4.
 635, Cape Churchill area : Canada
 G.S., 4.
 636, Eppler Lake area : Canada
 G.S., 4.
 637, Howard Lake area : Canada
 G.S., 4.
 638, Knife Delta area : Canada G.S., 4.
 639, Churchill area : Canada G.S., 4.
 640, Button Bay area : Canada G.S., 4.
 641, Nowell Lake area : Canada
 G.S., 4.
 642, Langille Creek area : Canada
 G.S., 4.
 643, Duddles Lake area : Canada
 G.S., 4.
 644, White Whale River area : Can-
 ada G.S., 4.
 645, Norton Lake area : Canada
 G.S., 4.
 Southeastern : Manitoba Dept. Mines
 and Nat. Res.

Areas described.

- General : Hutt, G. M.
 Split Lake area : Canada G.S., 12.

Economic geology.

- Bentonite : Leith, E. I.
 Beryl, Winnipeg River area : Davies,
 J. F. ; Gass, N. J.
 Copper, North Star and Don Jon mines,
 Flin Flon area : Hudson Bay
 Min. and Smelt. Co. Ltd. Geol.
 Staff, 1.
 Schist Lake mine, Flin Flon area :
 Hudson Bay Min. and Smelt.
 Co. Ltd. Geol. Staff, 3.
 Copper-zinc, Cuprus mine, Flin Flon
 area : Hudson Bay Min. and
 Smelt. Co. Ltd. Geol. Staff, 2.
 Gold, Nor-Acme mine, Snow Lake area :
 Hogg, N.
 Gypsum, Amaranth deposit : Brownell,
 G. M., 1.
 Gypsumville deposits : Brownell,
 G. M., 2.
 Lithium : Mulligan, R., 1.
 Winnipeg River area : Davies, J. F. ;
 Gass, N. J.
 Metallic minerals, exploration : Charle-
 wood, G. H., 3.
 Snow Lake-Herb Lake area, possi-
 bilities : Russell, G. A.
 Mineral occurrences, Chipewyan Lake-
 Herb Lake area : Quinn, H. A.
 Mineral resources, Canadian Pacific
 Railway area : Hutt, G. M.
 Exploration history : Charlewood,
 G. H., 2.
 Nickel, Lynn Lake area : Ruttan, G. D.
 Oil and gas, fields and discoveries, map,
 western : Canada G.S., 2.

Manitoba—Continued

Geologic maps.

- Chipewyan Lake-Herb Lake area :
Quinn, H. A.
Lynn Lake area : Ruttan, G. D.
Nor-Acme gold mine, Snow Lake area,
surface : Hogg, N.
Ryerson Lake-Winnipeg River area :
Davies, J. F.
Shatford Lake-Winnipeg River area :
Davies, J. F.
Snow Lake-Herb Lake area : Russell,
G. A.
Split Lake area : Canada G.S., 12.

Historical geology.

- Ashville formation, Cretaceous, sand
zone, stratigraphic map : Flem-
ing, O. J., 2.
Churchill quartzite, Precambrian :
Charlewood, G. H., 1.
Hayes River group-Island Lake series,
Precambrian, Island Lake
area : Meinert, R. J., Jr.
Lynn Lake area, Precambrian : Mill-
igan, G. C.
Prairie evaporite, Devonian, strati-
graphic map : Fleming, O. J., 1.
Red River formation, Ordovician, strati-
graphic map : Fleming, O. J., 5.
San Antonio formation, Precambrian,
Rice Lake area : Charlewood,
G. H., 1.
Stony Mtn. formation, Ordovician,
stratigraphic map : Fleming,
O. J., 6.
Winnipeg formation, Ordovician, strati-
graphic map : Fleming, O. J., 4.

Petrology.

- California Lake area : Moorhouse, M. D.
Chipewyan Lake-Herb Lake area :
Quinn, H. A.
Lynn Lake area, Precambrian, sulfide
mineralization : Ruttan, G. D.
Rice Lake area : Charlewood, G. H., 1.
Snow Lake-Herb Lake area : Russell,
G. A.
Split Lake area : Canada G.S., 12.
Winnipeg River area, Precambrian :
Davies, J. F.

Physical geology.

- Ashville formation, sand zone, struc-
ture contour map : Fleming,
O. J., 2.
Chipewyan Lake-Herb Lake area :
Quinn, H. A.
Fracture patterns, surface expression
on airphotos : Mollard, J. D., 3.
Island Lake area : Meinert, R. J., Jr.
Lynn Lake area : Milligan, G. C.
Sulfide ores : Ruttan, G. D.
Nor-Acme gold mine, Snow Lake area,
ore control : Hogg, N.
Precambrian, structure contour map :
Fleming, O. J., 3.
Red River formation, structure contour
map : Fleming, O. J., 5.

Manitoba—Continued

Physical geology—Continued

- Rice Lake area : Charlewood, G. H., 1.
Snow Lake-Herb Lake area : Russell,
G. A.
Stony Mtn. formation, structure con-
tour map : Fleming, O. J., 6.
Winnipeg formation, structure contour
map : Fleming, O. J., 4.
Winnipeg River-Johnston Lake area :
plutonic history : Eckelmann,
F. D., 3.

Physiographic geology.

- Cartwright area, washboard moraines :
Elson, J. A., 3.
Fracture patterns, airphotos, southern :
Mollard, J. D., 3.
Glaciation, boulder pavements, stri-
ations, southern : Elson, J. A., 5.
Souris basin glacial lakes, history : El-
son, J. A., 4.
See also Cartography ; Tech-
nique, *Mapping*.

Maps (excluding Geologic maps, *which see*).
Aeromagnetic.

- Alberta, Athabasca area, 477 : Canada
G.S., 4.
Beaver Lake area, 486 : Canada G.S.,
4.
Bergeron Creek area, 455 : Canada
G.S., 4.
Bitumont area, 445 : Canada G.S., 4.
Bolton Creek area, 458 : Canada G.S.,
4.
Bondiss area, 476 : Canada G.S., 4.
Bonnyville area, 589 : Canada G.S., 4.
Burnt Lakes area, 449 : Canada
G.S., 4.
Cache Lake area, 482 : Canada G.S., 4.
Chipewyan Lakes area, 416 : Canada
G.S., 4.
Clarke Creek area, 420 : Canada
G.S., 4.
Coffey Lake area, 464 : Canada
G.S., 4.
Cold Lake area, 500 : Canada G.S., 4.
Coolidge area, 478 : Canada G.S., 4.
Dapp area, 473 : Canada G.S., 4.
Dunkirk River area, 417 : Canada
G.S., 4.
Eaglenest Lake area, 460 : Canada
G.S., 4.
Eymundson Creek area, 465 : Canada
G.S., 4.
Firebag River area, 447 : Canada
G.S., 4.
Fort MacKay area, 440 : Canada
G.S., 4.
Gardiner Lakes area, 454 : Canada
G.S., 4.
Godin Lake area, 351 : Canada G.S., 4.
Goodfish Lake area, 483 : Canada
G.S., 4.
Grosmont area, 479 : Canada G.S., 4.
High Hill River area, 437 : Canada
G.S., 4.

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Alberta—Continued

- Horse Lake area, 492 : Canada G.S., 4.
 Hylo area, 491 : Canada G.S., 4.
 Joslyn Creek area, 452 : Canada G.S., 4.
 Kerchief Lake area, 409 : Canada G.S., 4.
 Lac la Biche area, 487 : Canada G.S., 4.
 Louise River area, 459 : Canada G.S., 4.
 McClelland Lake area, 446 : Canada G.S., 4.
 Mackay River area, 418 : Canada G.S., 4.
 Maloy area, 484 : Canada G.S., 4.
 Marguerite Lake area, 590 : Canada G.S., 4.
 Marguerite River area, 462 : Canada G.S., 4.
 Marie Lake area, 501 : Canada G.S., 4.
 Medley River area, 502 : Canada G.S., 4.
 Mikkwa River area, 450 : Canada G.S., 4.
 Mistehae Lake area, 338 : Canada G.S., 4.
 Muriel Lake area, 588 : Canada G.S., 4.
 Muskeg River area, 439 : Canada G.S., 4.
 Namur Lake area, 451 : Canada G.S., 4.
 Newbrook area, 475 : Canada G.S., 4.
 Osi Creek area, 443 : Canada G.S., 4.
 Osi Lake area, 444 : Canada G.S., 4.
 Pearson Lake area, 467 : Canada G.S., 4.
 Perryvale area, 474 : Canada G.S., 4.
 Pine Creek area, 493 : Canada G.S., 4.
 Pinehurst Lake area, 485 : Canada G.S., 4.
 Raymond Creek area, 457 : Canada G.S., 4.
 Reid Creek area, 463 : Canada G.S., 4.
 Reita Lake area, 499 : Canada G.S., 4.
 Richardson River area, 468 : Canada G.S., 4.
 Robert Creek area, 469 : Canada G.S., 4.
 Ronald Lake area, 466 : Canada G.S., 4.
 Ruth Lake area, 419 : Canada G.S., 4.
 Sawdy area, 480 : Canada G.S., 4.
 Seaforth Creek area, 415 : Canada G.S., 4.
 Shillelagh Lake area, 438 : Canada G.S., 4.
 Smoky Lake area, 489 : Canada G.S., 4.
 Snipe Creek area, 442 : Canada G.S., 4.
 Steepbank River area, 421 : Canada G.S., 4.

Maps—Continued

Aeromagnetic—Continued

Alberta—Continued

- Sutton Creek area, 422 : Canada G.S., 4.
 Tar River area, 453 : Canada G.S., 4.
 Thorhild area, 471 : Canada G.S., 4.
 Touchwood Lake area, 488 : Canada G.S., 4.
 Trout Creek area, 448 : Canada G.S., 4.
 Upper Dover River area, 441 : Canada G.S., 4.
 Upper Mikkwa River area, 456 : Canada G.S., 4.
 Victor Lake area, 490 : Canada G.S., 4.
 Vincent Lake area, 481 : Canada G.S., 4.
 Warspite area, 470 : Canada G.S., 4.
 Westlock area, 472 : Canada G.S., 4.
 Willow River area, 333 : Canada G.S., 4.
 Wolf River area, 591 : Canada G.S., 4.
 Woodenhouse River area, 410 : Canada G.S., 4.
 Maine, Harrington Lake quadrangle :
 Balsley, J. R., Jr., 6.
 Jo-Mary Mtn. area : Balsley, J. R., Jr., 5.
 Manitoba, Button Bay area, 640 : Canada G.S., 4.
 Cape Churchill area, 635 : Canada G.S., 4.
 Churchill area, 639 : Canada G.S., 4.
 Duddles Lake area, 643 : Canada G.S., 4.
 Eppler Lake area, 636 : Canada G.S., 4.
 Howard Lake area, 637 : Canada G.S., 4.
 Knife Delta area, 638 : Canada G.S., 4.
 Knights Hill area, 634 : Canada G.S., 4.
 Langille Creek area, 642 : Canada G.S., 4.
 Lovat Lake area, 629 : Canada G.S., 4.
 Meades Lake area, 631 : Canada G.S., 4.
 Nichol Lake area, 628 : Canada G.S., 4.
 Norton Lake area, 645 : Canada G.S., 4.
 Nowell Lake area, 641 : Canada G.S., 4.
 Quinn Lake area, 632 : Canada G.S., 4.
 Seal River area, 550, anomaly : Canada G.S., 5.
 Southeastern : Manitoba Dept. Mines and Nat. Res.
 Steel River area, 633 : Canada G.S., 4.
 White Whale River area, 644 : Canada G.S., 4.
 Wither Lake area, 630 : Canada G.S., 4.
 Minnesota, Beltrami-Clearwater Counties : Meuschke, J. L., 3.

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Aeromagnetic—Continued

Minnesota—Continued

Beltrami-Lake of the Woods Counties: Meuschke, J. L., 2.

Koochiching County: Meuschke, J. L., 4-7.

Lake of the Woods—Roseau Counties: Meuschke, J. L., 1.

Montana, Centennial Mtn. quadrangle: Balsley, J. R., Jr., 3.

Laredo quadrangle, Bearpaw Mts.: Balsley, J. R., Jr., 1.

Shambo quadrangle, Bearpaw Mts.: Balsley, J. R., Jr., 2.

Warrick quadrangle: Balsley, J. R., Jr., 4.

New Brunswick, Codys area, 597: Canada G.S., 4.

Hampstead area, 599: Canada G.S., 4.

McDougall Lake area, 593: Canada G.S., 4.

Musquash area, 592: Canada G.S., 4.

Rolling Dam area, 594: Canada G.S., 4.

St. George area, 596: Canada G.S., 4.

St. John area, 600: Canada G.S., 4.

St. Stephen area, 595: Canada G.S., 4.

Sussex area, 598: Canada G.S., 4.

New Hampshire, Berlin area: Bromery, R. W., 2.

Umbagog Lake area: Bromery, R. W., 1.

New Jersey, Franklin quadrangle: Henderson, J. R., 4.

Hamburg quadrangle: Henderson, J. R., 1.

Newfoundland quadrangle: Henderson, J. R., 5.

Newton East quadrangle: Henderson, J. R., 3.

Wawayanda quadrangle: Henderson, J. R., 2.

New York, Pine Island quadrangle: Henderson, J. R., 2.

Wawayanda quadrangle: Henderson, J. R., 2.

Northwest Territories, Catholic Lake area, 690: Canada G.S., 4.

Rauta Lake area, 403: Canada G.S., 4.

Stephenson Lake area, 402: Canada G.S., 4.

Nova Scotia, Baccaro area, 607: Canada G.S., 4.

Bridgewater area, 618: Canada G.S., 4.

Cape Sable Island area, 604: Canada G.S., 4.

Church Point area, 611: Canada G.S., 4.

Comeau Hill area, 602: Canada G.S., 4.

Kejlmkujik Lake area, 617: Canada G.S., 4.

La Have Islands area, 612: Canada G.S., 4.

Maps—Continued

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Nova Scotia—Continued

Lake Rossignol area, 614: Canada G.S., 4.

Liverpool area, 613: Canada G.S., 4.

Lockeport area, 603: Canada G.S., 4.

Lunenburg area, 619: Canada G.S., 4.

Meteghan area, 610: Canada G.S., 4.

Port Mouton area, 609: Canada G.S., 4.

Pubnico area, 605: Canada G.S., 4.

Shelburne area, 603: Canada G.S., 4.

Tusket area, 606: Canada G.S., 4.

Wentworth Lake area, 615: Canada G.S., 4.

Weymouth area, 616: Canada G.S., 4.

Yarmouth area, 601: Canada G.S., 4.

Ontario, Caribou Lake intrusion: Friedman, G. M., 2.

Cobalt area, 511: Canada G.S., 4.

Earlton area, 514: Canada G.S., 4.

Englehart area, 515: Canada G.S., 4.

Fabre area, 509: Canada G.S., 4.

Ingall Lake area, 507: Canada G.S., 4.

Lake Timagami area, 505: Canada G.S., 4.

Marten Lake area, 506: Canada G.S., 4.

Milnet area, 504: Canada G.S., 4.

Opikinimika Lake area, 280: Canada G.S., 4.

Ottertail Creek area, 508: Canada G.S., 4.

Shining Tree area, 285: Canada G.S., 4.

Sinclair Lake area, 286: Canada G.S., 4.

Thorlake area, 279: Canada G.S., 4.

Timagami area, 510: Canada G.S., 4.

Venetian Lake area, 551: Canada G.S., 4.

Ville-Marie area, 512: Canada G.S., 4.

Quebec, Adam River area, 522: Canada G.S., 4.

Angliers area, 513: Canada G.S., 4.

Canica Island area, 527: Canada G.S., 4.

Canoe Lake area, 545: Canada G.S., 4.

Chibougamau area, 542: Canada G.S., 4.

Cobalt area, 511: Canada G.S., 4.

Crinkle Creek area, 548: Canada G.S., 4.

Dickson Lake area, 540: Canada G.S., 4.

Earlton area, 514: Canada G.S., 4.

Englehart area, 515: Canada G.S., 4.

Fabre area, 509: Canada G.S., 4.

Indian River area, 526: Canada G.S., 4.

Kistabiche Creek area, 521: Canada G.S., 4.

Lac à l'Eau-Jaune area, 539: Canada G.S., 4.

Lac Barrière area, 516: Canada G.S., 4.

Maps—Continued

Aeromagnetic—Continued

Quebec—Continued

- Lac Boisvert area, 538: Canada G.S., 4.
 Lac Dumas area, 549: Canada G.S., 4.
 Lac Inconnu area, 541: Canada G.S., 4.
 Lac Madeleine area, 528: Canada G.S., 4.
 Lac Quévillon area, 524: Canada G.S., 4.
 McDonald Lake area, 537: Canada G.S., 4.
 MacIvor River area, 534: Canada G.S., 4.
 Malcasagi Lake area, 536: Canada G.S., 4.
 Michwacho Lake area, 518: Canada G.S., 4.
 Miller Creek area, 520: Canada G.S., 4.
 Mistassini Post area, 546: Canada G.S., 4.
 Olga Lake area, 535: Canada G.S., 4.
 Opaoa River area, 532: Canada G.S., 4.
 Opawica Lake-Lewis Lake area, 517: Canada G.S., 4.
 Opemisca Lake area, 519: Canada G.S., 4.
 Puskitamika Lake area, 529: Canada G.S., 4.
 Ramsay Bay area, 531: Canada G.S., 4.
 Rivière Allard area, 533: Canada G.S., 4.
 Rivière Coigny area, 525: Canada G.S., 4.
 Rivière de l'Épervier area, 544: Canada G.S., 4.
 Rivière Subercase area, 523: Canada G.S., 4.
 Ville-Marie area, 512: Canada G.S., 4.
 Waconichi Lake area, 547: Canada G.S., 4.
 Waswanipi area, 530: Canada G.S., 4.
 Saskatchewan, Abitau Lake area, 565: Canada G.S., 4.
 Alstead Lake area, 564: Canada G.S., 4.
 Apps Lake area, 494: Canada G.S., 4.
 Aubichon Lake area, 569: Canada G.S., 4.
 Buffalo Narrows area, 496: Canada G.S., 4.
 Calder River area, 555: Canada G.S., 4.
 Canoe Lake area, 552: Canada G.S., 4.
 Carlton Lake area, 554: Canada G.S., 4.
 Cinder Lake area, 563: Canada G.S., 4.
 Cold River area, 575: Canada G.S., 4.
 Deep Bay area, 543: Canada G.S., 4.
 Dillon area, 324: Canada G.S., 4.

Maps—Continued

Aeromagnetic—Continued

Saskatchewan—Continued

- Dipper Lake area, 567: Canada G.S., 4.
 Doré Lake North area, 571: Canada G.S., 4.
 Doré Lake South area, 568: Canada G.S., 4.
 Dorintosh area, 586: Canada G.S., 4.
 Durocher Lake area, 570: Canada G.S., 4.
 Flotten Lake area, 573: Canada G.S., 4.
 Goodsoil area, 585: Canada G.S., 4.
 Graham Lake area, 322: Canada G.S., 4.
 Green Lake North area, 578: Canada G.S., 4.
 Green Lake South area, 577: Canada G.S., 4.
 Ile-à-la-Crosse area, 562: Canada G.S., 4.
 Island Hill area, 587: Canada G.S., 4.
 Juggins Creek area, 553: Canada G.S., 4.
 Kazan Lake area, 495: Canada G.S., 4.
 Keeley Lake area, 559: Canada G.S., 4.
 Kesatasew Lake area, 557: Canada G.S., 4.
 Lac La-Plonge area, 560: Canada G.S., 4.
 La-Plonge area, 561: Canada G.S., 4.
 Lost Lake area, 558: Canada G.S., 4.
 McAllister Lake area, 321: Canada G.S., 4.
 McCusker Lake area, 307: Canada G.S., 4.
 Makwa Lake area, 582: Canada G.S., 4.
 Meadow Lake area, 580: Canada G.S., 4.
 Michel area, 323: Canada G.S., 4.
 Ministikwan Lake area, 583: Canada G.S., 4.
 Muskeg Lake area, 574: Canada G.S., 4.
 Nipin Lake area, 306: Canada G.S., 4.
 Niska Lake area, 319: Canada G.S., 4.
 Pierceland area, 584: Canada G.S., 4.
 Primrose Lake area, 556: Canada G.S., 4.
 Rapid View area, 581: Canada G.S., 4.
 Shagwenaw Lake area, 566: Canada G.S., 4.
 Sled Lake area, 579: Canada G.S., 4.
 Taggart Lake area, 578: Canada G.S., 4.
 Vermette Lake area, 320: Canada G.S., 4.
 Watapi Lake area, 305: Canada G.S., 4.
 Waterhen Lake area, 572: Canada G.S., 4.

Maps—Continued

Coal.

- Illinois, strippable reserves, south-eastern counties: Smith, W. Henking.
- Kentucky, Campton quadrangle: Briggs, R. P.
- White Oak quadrangle, Fire Clay bed: Adkison, W. L.
- Montana, Cokedale: Roberts, A. E.
- Ohio, Allegheny formation, lower, beds: DeLong, R. M.
- Oklahoma, eastern: Trumbull, J. V.
- Pennsylvania, bituminous: Deasy, G. F.
- Geophysical.*
- California, Los Angeles basin, north-western, Bouguer gravity: McCulloh, T. H.
- Cuba, Camagüey chromite district, gravity: Davis, Willard E.
- Gulf of Mexico area: Lyons, P. L., 2.
- Michigan, Upper Peninsula, central: Frantti, G. E.
- Nicaragua, Palacaguina area, potentiometric: Laganá, T.
- Saskatchewan, Lac La Ronge area, magnetic anomalies: Pearson, W. J., 1.
- Texas, Blanco and Gillespie Counties, gravity and magnetic: Barnes, V. E., 2.
- Cooke and Grayson Counties and adjoining areas, gravity and gravity derivative: Jopling, D. W.
- Stamford area, seismic: Van Sieten, D. C., 2.

Ground water.

- Alabama, Madison County, piezometric: Malmberg, G. T.
- Marengo County: Sutcliffe, H., Jr.
- Monroeville area: Ivey, J. B.
- Montgomery area: Powell, W. J.
- Arkansas, Lonoke-Prairie-White Counties: Counts, H. B.
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 Shark spine, Saginaw formation, Pennsylvanian, St. Charles-Garfield mine: Dorr, J. A., Jr.
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- Bacteria, paleoecology, bibliography: ZoBell, C. E.
 Charophyta, Mesozoic, North America: Peck, R. E.
 Disintegration method: Chamney, T. P.
 Fluoridization technique: Upshaw, C. F.
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- Nomenclature, plant components, Cretaceous, western Canada: Rouse, G. E.
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- Trinidad, Gulf of Paria, Recent: Todd, R., 3.
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- Pyrite, optical anisotropism: Stanton, R. L.
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- Crestmore quarry: Jenni, C. M.
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- Localities: Henry, D. J.
- Soledad Canyon, emerald-green quartz: Ransom, J. E.
- Florida: Graves, H. B., Jr.
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- Four Peaks area, amethyst: Sinkankas, J., 3.
- Johnson Camp area, metallic, origin: Cooper, J. R.
- Maggie Canyon, manganese: Kumke, C. A.
- Monument No. 2 mine, uranium, structural control: Fennell, T. L.
- Pikes Peak hematite deposits: Farnham, L. L.
- British Columbia, Antler Creek area, Cariboo district, lode gold, origin: Sutherland Brown, A., 1.
- Beaverdell camp, silver, vein faults: Kidd, D. F.
- Bluebell mine, lead-zinc, structural control: Irvine, W. T., 2.
- Canam copper deposit, breccia filling: Bacon, W. R., 3.
- Deer Horn property, Omineca district: Papezik, V. S.
- Falkland, gypsum, origin: Gypsum, Lime and Alabastine, Canada Ltd.
- French mine, gold: Lamb, J., 2.
- H. B. mine, Salmo area, lead-zinc: Irvine, W. T., 3.
- Highland Valley area, copper, paragenesis: White, W. Harrison.
- Iron Mtn., lead-zinc and tungsten: Rennie, C. C.
- Jervis Inlet area: Bacon, W. R., 1.
- Kootenay King mine, silver-lead-zinc: Ney, C. S., 2.
- Metallic: British Columbia Dept. Mines.
- Monarch and Kicking Horse mines, lead-zinc: Ney, C. S., 1.
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- Pacific Nickel mines, nickel-copper, origin: Aho, A. E.
- Phoenix camp, structural control: Seraphim, R. H.
- Red Rose mine, tungsten: Sutherland Brown, A., 2.
- Reeves MacDonald mine, silver-lead-zinc: Fyles, J. T., 2.
- Rexspar property, Birch Island area, uranium: Joubin, F. R., 1.
- Salmo area, lead-zinc, structural control: Fyles, J. T., 1.
- Silver Standard mine, gold-silver-lead-zinc: Smith, Alexander.
- Southwestern, limestone: Mathews, W. H., 1.
- Summit Camp, Greenwood area, origin: Carswell, H. T.

Mineral deposits—Continued

British Columbia—Continued

- Sunshine Lardeau mine, metallic: Keys, M. R.
- Texada and Vancouver Islands, magnetite: Bacon, W. R., 2.
- Tulsequah Chief and Big Bull mines, copper-lead-zinc: Irvine, W. T., 1.
- Violamac mine, silver-lead-zinc, structural control: Ambrose, J. W., 1.
- Zoning, examples: Gunning, H. C., 3.
- California: Calif. Dept. Nat. Res. Div. Mines, 1.
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- Island Mtn. mine, copper, origin: Stinson, M. C.
- Lead-zinc: Goodwin, J. G., 2.
- Mariposa County, metallic and non-metallic: Bowen, O. E., Jr.
- Pala pegmatite district, gem materials: Sinkankas, J., 2.
- Pumice, pumicite, and volcanic cinders: Chesterman, C. W.
- West Shasta district, copper-zinc, origin: Kinkel, A. R., Jr.
- Canada: Stockwell, C. H.

- Brucitic limestone: Goudge, M. F., 1.
- Columbium and tantalum: Jones, R. J.
- Industrial: Canadian Inst. Mining and Metallurgy Indus. Minerals Div.
- Lithium: Mulligan, R., 2.
- Research, geological, proposed program: Gunning, H. C., 2.
- Structural geology, symposium: Canadian Inst. Mining and Metallurgy Geology Div.
- Central America, strategic, and base metals: Roberts, R. J.
- Colorado, Bitter Creek mine, Uravan area, uranium-vanadium zoning, origin: Heyl, A. V., Jr.
- Caribou silver-mining area, uranium, origin: Moore, F. B.
- Central City district, pitchblende, origin: Sims, P. K.
- Climax, molybdenite, ring-fracture mineralization: Wallace, S. R.
- Garfield quadrangle: Dings, M. G.
- Golden Gate Canyon-Ralston Creek area, uranium: Bird, A. G.
- Guffey area, radioactive: Heinrich, E. W., 2.
- Idarado mine, metallic, origin: Hillebrand, J. R., 1.
- Morrison area, Dakota formation, uranium, origin: Goldstein, E. H.
- Ouray area, metallic, origin: Kelley, V. C., 6.
- Ouray to Red Mtn. Pass, metallic: Hillebrand, J. R., 2.

Mineral deposits—Continued

Colorado—Continued

- Park-Fremont Counties, sillimanite: Heinrich, E. W., 3.
- Pegmatites, origin: Heinrich, E. W., 1.
- San Juan Basin, titaniferous heavy-mineral sandstones: Chenoweth, W. L.
- San Juan Mts., lithologic control: Bejnar, W.
- Silverton quadrangle, metallic: Rosenzweig, A.
- Uravan district, uranium-vanadium, diagenesis and mineralization: Weeks, A. D.
- Uranium-vanadium zoning: Heyl, A. V., Jr.
- Whitepine area, Tomichi district, metallic: Robinson, C. S., 2.
- Wood-East Calhoun area, Central City district, uranium and metallic minerals, origin: Drake, A. A., Jr.
- Colorado Plateau, Salt Wash member, uranium-vanadium, relation to lithofacies: Mullens, T. E.
- Uranium-vanadium, classification: Bottinelly, T.
- Conglomerate reefs, ancient, Blind River, Ontario, cf. Witwatersrand, uranium, origin, hypotheses: Davidson, C. F., 1.
- Connecticut, exclusive of clay, sand, gravel, and peat: Pearre, N. C., 3.
- Florida, Alachua County, pebble phosphate, origin: Pirkle, E. C., Jr., 2.
- Georgia, kaolin, origin: Kesler, T. L.
- Gulf Coastal Plain, salt-dome sulfur, origin: Feely, H. W.
- Trinity group, Cretaceous, anhydrite, origin: Forgetson, J. M., Jr., 4.
- Hydrothermal, origin, fluid composition, limitations: Barton, P. B., Jr., 1.
- Hypogene ores, origin, critical factors in exploration: Blehan, W. J.
- Idaho, Baker quadrangle, copper and gold: Anderson, A. L.
- Idaho batholith area, placers, radioactive minerals, origin: Mackin, J. H.
- Latah County: Hubbard, C. B.
- Iowa, Catfish Creek area, lead-zinc: Brown, C. E.
- Iron and sulfur deposition, mineralizing solutions: Butler, B. S.
- Kansas, general: Tolsted, L. L.
- Labrador, Knob Lake area, iron: Westervelt, R. D.
- Knob Lake area, iron, origin: Douglas, G. V., 3.
- Lead-zinc, supergene alteration: Takahashi, T.

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- Maine, Dudley manganese deposit: Eilertsen, N. A.
- Manganese, sedimentary origin, separation from iron: Krauskopf, K. B., 1.
- Manitoba, Cuprus mine, copper-zinc: Hudson Bay Min. and Smelt. Co. Ltd. Geol. Staff, 2.
- Lithium: Mulligan, R., 1.
- Lynn Lake area, sulfides, origin: Ruttan, G. D.
- Nor-Acme mine, gold: Hogg, N.
- North Star and Don Jon mines, copper: Hudson Bay Min. and Smelt. Co. Ltd. Geol. Staff, 1.
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- Metalliferous provinces and ores, classification, origin: Sullivan, C. J., 2.
- Metallogenic provinces, cosmic origin: Skerl, A. C.
- Mexico, Boleo district, Baja California, copper, origin: Nishihara, H., 2; Wilson, I. F.
- Canoas district, Zacatecas, mercury, origin: Gallagher, D.
- Chihuahua, pyrometamorphic zinc deposits, origin: Allen, V. T.
- Concepción del Oro district, Zacatecas, phosphate, origin: Rogers, C. L.
- Durango, tin, origin: Smith, Ward C.
- Lucifer mine, Baja California, manganese, origin: Nishihara, H., 1.
- Mineral and geologic provinces, relationship: Behre, C. H., Jr., 2.
- Northeastern, guano: Rodríguez Cabo, J., Jr., 3.
- Zimapán district, Hidalgo, lead-zinc-silver, origin: Simons, F. S.
- Michigan, copper, native, origin: White, W. S.
- Iron ranges: Reed, R. C.
- Marquette range, Negaunee formation, iron, origin: Anderson, G. J.
- Northern, uranium, origin: Vickers, R. C., 2.
- White Pine mine, copper, origin: Rand, J. R.
- Missouri, Bonne Terre mine, lead, origin: Eckelmann, F. D., 2.
- Iron Mtn., iron, origin: Ridge, J. D.
- Sedimentary iron: Hayes, W. C., Jr.
- Southeastern Lead Belt, mining geology: Snyder, F. G., 1.
- Montana, Beaverhead County, chrysotile asbestos: Boots, D. A.
- Butte district, manganese oxidation and enrichment: Allsman, P. L.

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- Eastern, lignite basin, uranium: Towse, D. F., 3.
- Lone Eagle mine, Boulder batholith, uranium: Wright, H. D., 2.
- Missoula-Ravalli Counties: Sahinen, U. M., 1.
- Sheridan-Alder area: Levandowski, D. W.
- Uranium and thorium: Jarrard, L. D.
- W. Wilson mine, secondary uranium: Wright, H. D., 1.
- Nevada, Broken Hills Range, rhyolite alteration, paragenesis: Vitaliano, C. J., 2.
- Elko County, metallic: Granger, A. E., 1.
- Kaiser mine, fluorite: Matson, E. J.
- New Brunswick, Bathurst area, sulfides, origin: Holyk, W. K.
- Burnt Hill mine, tungsten, origin: Victor, I.
- Keymet mine, Bathurst area, sulfides: McAllister, A. L.
- Uranium: Gross, G. A.
- Woodstock area, iron-manganese, origin: Sidwell, K. O. J.
- New Hampshire, exclusive of clay, sand, gravel, and peat: Pearre, N. C., 2.
- New Jersey, Edison area, magnetite, origin: Baker, D. R.
- Franklin-Sterling area, zinc-manganese, origin: Sampson, E., 1.
- Highlands, magnetite, origin: Budington, A. F., 1.
- Sterling Hill, zinc: Metsger, R. W.
- New Mexico, Ambrosia Lake area, uranium: Zitting, R. T.
- Ambrosia Lake area, uranium, origin, relation to preexisting oil pool: Birdseye, H. S.
- Cerrillos area, lead-zinc: Disbrow, A. E., 1.
- Haystack and Poison Canyon mines, uranium, origin: Mathewson, D. E., 2.
- Metallic: Anderson, E. C., 2.
- Northeastern, clay: Glassmire, S. H.
- Pelican area, Palomas district, metallic: Jahns, R. H., 1.
- Pyrometamorphic zinc deposits, origin: Allen, V. T.
- San Juan Basin, titaniferous heavy-mineral sandstones: Chenoweth, W. L.
- Sangre de Cristo Mts.: Anderson, E. C., 1.
- South-central, dolomite: Kottlowski, F. E., 2.
- New York, Lake Sanford district, titaniferous magnetite, origin: Gillson, J. L., 1.
- St. Lawrence and Jefferson Counties, pyrite, origin: Frucha, J. J.

Mineral deposits—Continued

New York—Continued

Schroon Lake area, epidote, origin: Rowley, E. B.

Newfoundland, Grey River area, tungsten: Bahyrycz, G. S.

Port au Port Peninsula, strontium: Baird, D. M., 4.

St. Lawrence district, fluorite: Williamson, D. H.

Wabana area, Conception Bay, iron, origin: Lyons, J. C.

Nicaragua: Nicaragua Servicio Geol. Nac.

Monte Carmelo, iron: Zoppis de Sena, R., 1.

Palacagüina area, antimony, origin: Zoppis Bracci, L., 1.

North Carolina, Beaufort County, phosphorite, origin: Brown, P. M., 2.

Ore Knob mine, copper: Eckman, L. P.

North Dakota, uranium in lignite: Towse, D. F., 1.

Western, lignite basin, uranium: Towse, D. F., 3.

Northwest Territories, Consolidated Discovery Yellowknife mine, gold: Wiwchar, M. B.

Coppermine River area, copper: Jenney, C. P., 1.

Giant Yellowknife gold mine, origin: Coleman, L. C.

Pine Point area, Great Slave Lake, lead-zinc: Campbell, N.

Port Radium mine, pitchblende, paragenesis: Campbell, D. D., 1.

Nova Scotia, gypsum, origin: Goodman, N. R.

Mindamar mine, Cape Breton Island, copper-lead-zinc: Watson, K. D., 2.

Uranium: Gross, G. A.

Walton barite deposit, origin: Jewett, G. A.

Ontario, Algoma district, Quirke Lake trough, uranium, origin: Hart, R. C.

Algoma district, uranium, sedimentary features: Joubin, F. R., 3.

Bancroft area, radioactive: Satterly, J.

Bass Lake area, aplites, metallic minerals: Sampson, E., 2.

Black Donald mine and Kirkham property, graphite: Hewitt, D. F., 1.

Blind River area, uranium, origin: Robertson, D. S.; Roscoe, S. M., 1.

Canadian Dyno Mines property, uranium: Vallance, R. F.

Cobalt camp, Temiskaming area, silver-cobalt: Thomson, Robert, 1.

Cochenour Willans mine, gold: Kurylow, C. J.

Mineral deposits—Continued

Ontario—Continued

Copper: Thomson, J. E., 1.

Eastern, phlogopite-apatite, origin: Wilson, M. E., 2.

Errington and Vermilion Lake mines, Sudbury area, sulfides, origin: Martin, W. C.

Frood-Stobie mine, nickel-copper and accessories: Zurbrigg, H. F.

Gowganda area, silver, origin: Moore, E. S., 2.

Hardy mine, Sudbury district, nickel-copper: Mitchell, G. P.

Hislop Township, gold: Prest, V. K., 1.

Johns-Manville properties, asbestos, origin: Hendry, N. W.

Kerr-Addison mine, Larder Lake area, gold-silver: Baker, J. W.

Kyanite, origin: Hewitt, D. F., 2.

Lead: Thomson, J. E., 1.

Lithium: Mulligan, R., 1.

Madoc, talc: Hewitt, D. F., 5.

Manitouwadge Lake area, sulfides, origin and controls: Pye, E. G.

Michipicoten siderites, origin: Goodwin, A. M., 2.

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Nickel: Thomson, J. E., 1.

North Bay area, columbium-uranium, origin: Gill, J. E., 3.

Pronto mine, uranium, sedimentary types: Holmes, S. W.

Quirke Lake-Elliott Lake area, uranium, origin: Roscoe, S. M., 2.

Renfrew County, corundum, origin: Carlson, H. D.

Sudbury area, nickel-copper, recent survey problems: Thomson, J. E., 9.

Sudbury basin, copper-lead-zinc: Thomson, J. E., 2.

Willroy property, Manitouwadge area, sulfides, silver-bearing: Chown, E. H. M.

Zinc: Thomson, J. E., 1.

Oregon, southwestern, chromite, origin: Ramp, L.

Origin, blister hypothesis: Wolfe, C. W.

Heat and temperature: Sullivan, C. J., 1.

Review: Mutch, A. D.

Stability diagrams, related to assemblages and Lindgren classification: Holland, H. D., 2.

Pennsylvania, Allegheny Plateau, uranium, sedimentary: McCauley, J. F.

Cornwall iron mine: Geyer, A. R.

Pipelike ore bodies, plutonic rocks, origin: Douglas, G. V., 2.

Quebec, Barvue mine, Barraute Township, zinc-silver: Weber, W. W. L., 1.

Beetz Lake area: Grenier, P. E., 1.

Mineral deposits—Continued

Quebec—Continued

- Bevcon mine, Louvicourt Township, gold: Kempthorne, H. R.
- British Canadian mine, asbestos, origin: Riordon, P. H., 3.
- Candego mine, silver-lead-zinc: Wolfosky, L., 1.
- Carey-Canadian asbestos deposit, origin: Merrill, R. J.
- Chibougamau area, mining properties: Assad, R. J., 1.
- Sulfides: Malouf, S. E., 1.
- Chibougamau Explorers mine, North Lake area, gold: Malouf, S. E., 2.
- Copper Mtn. and Needle Mtn., Gaspé Peninsula, copper: Bell, A. M.
- Gaspé Peninsula, uranium: Gross, G. A.
- Huntingdon mine, Eastman area, copper: Carrière, G. E., 1.
- Jeffrey mine, asbestos, origin: Allen, C. C.
- Johan Beetz area: Cooper, G. E., 1.
- Kilmar area, magnesite, origin: Bray, W. T.
- Knob Lake area, iron: Westervelt, R. D.
- Iron, origin: Douglas, G. V., 3.
- Labrador trough, base metals, origin: Slipp, R. M.
- La Chaloupe River area, anorthosite-ilmenite-pegmatite relations: Jenkins, J. T., 2.
- Lake Renzy nickel area, sulfides, origin: Forrester, M. R.
- Laurentian Highlands, phlogopite-apatite, origin: Wilson, M. E., 2.
- Lesueur Township, gold and sulfides: Graham, R. B., 1.
- Lithium: Mulligan, R., 1.
- Normandie and Vimy Ridge mines, asbestos: Riordon, P. H., 4.
- Opemiska copper mine: Derry, D. R., 1.
- Potton Township, talc: Morgan, J. H.
- Quemont mine, Rouyn Township, sulfides: Taylor, B.
- Quesabe mine, Duprat Township, gold: Halet, R. A.
- St. Donat Mtn., quartz, origin: MacIntosh, J. A.
- Southeastern, asbestos, origin: Riordon, P. H., 1.
- Suffield mine, Sherbrooke area, sulfides: Carrière, G. E., 2.
- Thetford Mines, asbestos, origin: Riordon, P. H., 2.
- Thetford-Black Lake area, asbestos, origin: Riordon, P. H., 6.
- Thorne-Leslie-Clapham area: Kretz, R. A., 2.
- Saskatchewan, Beaverlodge mines, pitchblende, structural features: Buffam, B. S. W.

Mineral deposits—Continued

Saskatchewan—Continued

- Gunnar mine, Beaverlodge area, uranium: Jolliffe, A. W.
- Hanson Lake area, sulfides: Byers, A. R., 2.
- Manawan Lake area, sulfides and radioactive pegmatite: Kirkland, S. J. T.
- Middle Foster Lake area, radioactive pegmatite prospect: Mawdsley, J. B., 2.
- Rix Athabasca mine, uranium: Joubin, F. R., 2.
- Uranium City area, pitchblende: Tremblay, L. P., 1.
- Verna mine, Beaverlodge area, uranium: Campbell, D. D., 2.
- Sediments and sedimentary rocks, ore patterns, origin: Bain, G. W., 3.
- South Carolina, kaolin, origin: Kesler, T. L.
- Monazite, stream placers: Perry, E. S.
- South Dakota, Black Hills, Fall River sandstone, uranium, origin: Vickers, R. C., 1.
- Black Hills, uranium: King, J. W.
- Peerless pegmatite, Keystone district, beryl and accessory minerals: Sheridan, D. M.
- Spilitic differentiation products: Amstutz, G. C., 2.
- Sulfides, phase assemblages: McKinstry, H. E., 2.
- Sequence of phases: McKinstry, H. E., 1.
- Texas, Karnes County area, uranium, origin: Eargle, D. H.
- United States, Great Basin, relation to intrusive porphyry: Stringham, B. F., 1.
- Uranium, sandstone-type, bibliography: Mehn, R. E.
- Western, asphalt and uranium, origin: Hall, W. J., Jr.
- Uranium, selenium in sulfides, source: Coleman, R. G., 2.
- Uranium and thorium: Jarrard, L. D.
- Uranium, characteristics, aid to exploration: Kratchman, J., 1.
- Sedimentary rocks, origin: Gruner, J. W.
- Types, classification: Kratchman, J., 2.
- Origin: Klepper, M. R., 2.
- Utah, Chief mine, Tintic district, metallic: Evans, M. T.
- Dragon mine, halloysite: Kildale, M. B., 1.
- East Tintic district, metallic: Bush, J. Bernard, 1.
- Main Tintic district, metallic, zoning, origin: Cook, Douglas R.
- Marysvale uranium district, specific areas, origin: Kerr, P. F., 3.

Mineral deposits—Continued

Utah—Continued

North Tintic district, metallic: Disbrow, A. E., 2.

Temple Mtn. area, uranium, origin: Kerr, P. F., 2.

Tintic Standard, North Lily, and Eureka Lilly mines, metallic: Kildale, M. B., 2.

Vanadium, origin, reduction by wood and lignite, experimental: Pommer, A. M.

Vermont, exclusive of clay, sand, gravel, and peat: Pearre, N. C., 1.

Vertical zoning: Park, C. F., Jr., 2.

Virginia, Clifton Forge iron district: Lesure, F. G.

Gossan Lead district: Stose, A. I. J. Southwestern, relation to Late Cretaceous-early Tertiary erosion surface: Sears, C. E., Jr., 2.

Washington, Miners Queen, copper: Magill, E. A.

Uranium: Huntting, M. T.

Wyoming, Black Hills, uranium: King, J. W.

Crooks Gap district, uranium, origin: Melbye, C. E.

Du Noir area: Keefer, W. R., 1.

Gas Hills area, uranium, origin: Erickson, E. C.; Zeller, H. D.

Hulett Creek area, uranium: Goode, H. D.

Mayoworth area, uranium in oolitic limestone, origin: Gullinger, R. R.

Monument Hill area, uranium, origin: Meschter, D. Y.

Pumpkin Buttes area, uranium: Sharp, W. N.

Yukon, field reports, 1898-1933: Bostock, H. S., 2.

Galena Hill area, silver-lead-zinc, origin: Boyle, R. W., 1.

Keno Hill-Galena Hill area, silver-lead-zinc: Boyle, R. W., 2.

United Keno Hill mines, silver-lead-zinc, fracture control: Carmichael, A. D., Jr.

Zonal theory: Park, C. F., Jr., 1.

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Acanthite, polymorphism and twinning: Frueh, A. J., Jr., 2.

Allanite, New York: Rowley, E. B.

Radioactive: Smith, W. Lee.

Andalusite, California: Rose, R. L.

Aragonite, Wyoming, twin crystals: Goldring, E. D.

Avelinoite: Lindberg, M. L. L.

Bismutoferrite: Milton, C., 3.

Brannerite, California: Hewett, D. F., 1. Ontario: Moddle, D. A.

Brucite: Goudge, M. F., 1.

Cerite, crystal structure: Gay, P.

Mineral descriptions—Continued

Chalcopyrite, high-temperature modification: Koucky, F. L., Jr.

Chapmanite: Milton, C., 3.

Chloritoid: Halferdahl, L. B.

Crystal structure: Harrison, F. W.

Cinnabar, California: Woodhouse, C. D., 2.

Classification, mineral associations: Smith, S. L.

Columbite, Colorado: Heinrich, E. W., 4.

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Navesink formation, Cretaceous, correlation: Nine, O. W., Jr.

Schoharie formation, Devonian, redefinition: Johnsen, J. H.

Shawangunk and Green Pond conglomerates, Silurian: Thomson, A. F., 1.

Equivalency: Thomson, A. F., 2.

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Ilmenite, alteration mechanism, Coastal Plain sand cf. Highlands rocks: Lynd, L. E.

Jacksonburg formation, western: Ray, S., 2.

Newark group sediments, clay minerals: Sturm, E.

Radioactive minerals: Markewicz, F. J., 2.

Sterling Hill zinc deposit: Metsger, R. W.

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Paleontology.

- Foraminifera, Eocene, correlations:
Fox, S. K., Jr., 2.
Vincentown formation, Paleocene:
McLean, J. D., Jr., 1.
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Plain: Gill, H. E.
Miocene, new species: Oleksyshyn, J.
Navesink formation, Cretaceous, micro-
fauna: Nine, O. W., Jr.
Ostracodes, Vincentown formation,
Eocene: Adams, J. K.
Reptile footprints, Triassic, Milford
area: Baird, D., 2.

Petrology.

- Conglomerates and quartzites, Silurian,
northwestern: Thomson, A. F., 1.
Edison area, gneiss complex, cf. Ad-
irondacks: Baker, D. R.
Franklin-Sterling area, Precambrian:
Baum, J. L.
Highlands, magnetite areas: Budding-
ton, A. F., 1.
Precambrian: Smith, B. L.
Lambertville diabase, nickel distribu-
tion: Storm, T. W.
Lockatong argillite, Upper Triassic:
Van Houten, F. B., 3.
Mt. Gilboa, syenite, origin, metamor-
phosed basic rocks: Ryan, J. D.
Teschenitic rock, with Triassic diabase,
Lambertville area: Milton, C., 2.
Triassic basalt and diabase: Johnson,
H., 1.

Physical geology.

- Coastal Plain, Cretaceous-Tertiary, test
drilling: Johnson, M. E., 3.
Franklin-Sterling area: Baum, J. L.
Highlands, Precambrian: Smith, B. L.

Physiographic geology.

- Provinces, soil materials, maps: Hol-
man, W. W.

New Mexico.

- Gamma-ray logs, radon effects, Grants
uranium area: Hilpert, L. S.
Geomagnetism, late Cenozoic basalts,
northeastern: Muehlberger,
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eralogists, Permian Basin Sec.
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Soc.
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ter, Ogallala formation, Llano
Estacado: Barker, F. B., 2.
Seismic exploration, Delaware basin:
Trostle, M. E.

New Mexico—Continued

- Seismic survey, Anderson Ranch oil
field: Swenumson, G. H.
Symposium, oil and gas fields, south-
eastern: Stipp, T. F., 1.

Areas described.

- Ambrosia Lake area: Zitting, R. T.
Carlsbad Caverns East quadrangle:
Hayes, P. T., 1.
Peloncillo Mts.: Gillerman, E.

Economic geology.

- Barite, Hansonburg district: Callaghan,
E.
Carbon dioxide, Union County: Foster,
R. W., 1.
Clay, northeastern, possibilities: Glass-
mire, S. H.
Coal, San Juan County, reserves: Hayes,
P. T., 2.
Dolomite, south-central: Kottlowski,
F. E., 2.
Lead-zinc, Cerrillos area: Disbrow,
A. E., 1.
Magnesium, dolomites, south-central:
Kottlowski, F. E., 2.
Manganese, Luis Lopez district, hydro-
thermal zoning of lead: Jicha,
H. L., Jr.
Metallic minerals, Pelican area, Pa-
lomas district: Jahns, R. H., 1.
Resources: Anderson, E. C., 2.
Mineral deposits, Sangre de Cristo Mts.:
Anderson, E. C., 1.
Mineral resources, Dwyer quadrangle:
Elston, W. E.
Oil and gas, Bisti area: Devlin, F. J.
Delaware basin: Barnes, C. E.
Gallegos-Gallup field: Matheny, M. L.,
1.
San Juan Basin, Cretaceous: Reese,
V. R.; Reneau, W. E., Jr.
Southeastern fields: Stipp, T. F., 1.
Perlite, Stendel deposit: Weber, R. H.
Petroleum, Anderson Ranch field: Swen-
umson, G. H.
Bisti field, Gallup sandstone: Tom-
kins, J. Q.
Hospah field: King, V. L.
Medio field: Ostrander, R. E.
San Juan Basin, rim area: Budd,
H., 2.
Upper Cretaceous accumulation:
Wengerd, S. A., 3.
Verde-Gallup pool: Speer, W. R.
Rare-earth minerals, heavy-mineral
sandstones, San Juan Basin,
possibilities: Chenoweth, W. L.
Sulfur: Wideman, F. L.
Titaniferous heavy-mineral sandstones,
San Juan Basin, possibilities:
Chenoweth, W. L.
Uranium, Ambrosia Lake area: Zitting,
R. T.
Ambrosia Lake area, relation to pre-
existing oil pool: Birdseye,
H. S.

New Mexico—Continued

Economic geology—Continued

Uranium—Continued

- Grants area, fracture controls :
Mitcham, T. W., 2.
Haystack and Poison Canyon mines :
Mathewson, D. E., 2.
Morrison formation, McKinley
County : Konigsmark, T. A.
Mt. Taylor-Rio Puerco area : Mathew-
son, D. E., 1.
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J. W., 3.
Toddlito limestone, Grants area : Ealy,
G. K. ; Hilpert, L. S.

Geologic maps.

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Carlsbad Caverns East quadrangle :
Hayes, P. T., 1.
Cerrillos area : Disbrow, A. E., 1.
Chuska Mts., volcanic centers : Apple-
dorn, C. R.
Clayton area : Baldwin, B., 2.
Dog Springs quadrangle : Givens, D. B.
Dwyer quadrangle : Elston, W. E.
Laguna quadrangles : Moench, R. H., 1,
2.
Luera Spring quadrangle : Willard,
M. E., 1.
Northwestern : Dane, C. H., 3.
Pelican area, Palomas district : Jahns,
R. H., 1.
Pifonville quadrangle : Willard, M. E.,
2.
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Questa quadrangle : McKinlay, P. F.
San Juan Basin : Four Corners Geol.
Soc. ; O'Sullivan, R. B.
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Soc., 1.
Satan Pass-Thoreau area : Four Corners
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Stendel perillite deposit : Weber, R. H.
Torrance County : Smith, R. E.

Ground water.

- Clayton area : Baldwin, B., 2.
Crow Flats area : Bjorklund, L. J., 3.
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Z. E.
Torrance County : Smith, R. E.
Tucumcari area : Trauger, F. D.

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Cerrillos area, Eocene-Pleistocene : Dis-
brow, A. E., 1.

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Historical geology—Continued

- Chavez Canyon, Rio Arriba County,
Pennsylvanian, measured sec-
tion : Muehberger, W. R., 1.
Clayton area, Triassic-Quaternary :
Baldwin, B., 2.
Dakota sandstone and Mancos shale,
Cretaceous, Gallup area : Dane,
C. H., 1.
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Barnes, C. E.
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Recent : Givens, D. B.
Dwyer quadrangle, Precambrian-Qua-
ternary : Elston, W. E.
Fra Cristobal Mts., Precambrian-Per-
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R. C.
Galisteo formation, Eocene, Los Cer-
rillos area, age : Robinson, P.,
2.
Gallup sandstone, Cretaceous, age and
correlations : Beaumont, E. C. ;
Dane, C. H., 2.
Bisti oil field : Tomkins, J. Q.
Facies : Budd, H., 1.
Gallup area, brookite-bearing : Sun,
M.-S., 2.
Gallup-Grants area, Pennsylvanian-
Cretaceous : Smith, C. T., 2.
Grants area, Jurassic : Hilpert, L. S.
Guadalupe Mts., Pleistocene cave
fauna, climatic change : Mur-
ray, K. F.
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complex : Newell, N. D., 1.
Hospah oil field, Pennsylvanian-Cre-
taceous : King, V. L.
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Lucy archaeological site, Pleistocene
dating : Harbour, J.
Mancos formation, Cretaceous, San
Juan Basin : Budd, H., 2.
Nacimiento Mts. and San Juan Basin,
geologic history : Parker, J. W.
Navajo country, Upper Triassic-Ju-
rassic : Harshbarger, J. W.
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northern Mexico subsurface :
Ramirez M., J. C.
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aware basin : Miller, D. N., Jr.
Precambrian-Quaternary, west-central :
Foster, R. W., 2.
Puertecito quadrangle, Permian-Qua-
ternary : Tonking, W. H.
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ternary : McKinlay, P. F.
Raton basin, Cretaceous-Tertiary : John-
son, Ross B.
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H. W., 1.
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R. T., 1.

New Mexico—Continued

Historical geology—Continued

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Mopper, J. A., 2.

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Stratigraphic names, catalog: Mopper, J. A., 1.

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Sierra Grande uplift, Cambrian-Cretaceous, subsurface: Neiler, W. D.

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Torrance County, Precambrian-Quaternary: Smith, R. E.

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Wolfcamp formation, Permian, Glass Mts.: Soc. Econ. Paleontologists and Mineralogists, Permian Basin Sec.

Glass Mts., correlation: Jarvis, D.
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Hansonburg district, list and description: Sun, M.-S., 3.

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Liquid inclusions, Hansonburg and Derry districts, mineral suites: Ames, L. L., Jr., 1.

Pyroxenes, pyrometamorphic zinc deposits: Allen, V. T.

Santafeite: Sun M.-S., 5.

Zircons, Animas stock and associated rocks: Alper, A. M., 1.

Paleontology.

Alamosa Creek area, Cretaceous, Upper, faunal zones: Dane, C. H., 4.

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Brachiopod, terebratulid, Magdalena formation, Pennsylvanian: Cooper, G. A., 2.

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Folsom-Sandia specimens, Sandia Cave, Quaternary: Hibben, F. C.

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Mammals, Burnet Cave, Guadalupe Mts., Pleistocene, ecology and climate: Murray, K. F.

Petrology.

Carlsbad Caverns, noncarbonate deposits, clastic and gypsum: Good, J. M.

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Delaware Mtn. sandstone, Permian basin, origin: Hull, J. P. D., Jr.

Dwyer quadrangle, igneous rocks: Elston, W. E.

Hanover mining area, trace element distribution: Barnes, H. L., 2.

Harding pegmatite, melting and recrystallization, experimental: Jahns, R. H., 2.

Haystack and Polson Canyon mines, petrography of ore host: Colman, H. C.

Jackpile sandstone: Schlee, J. S., 2.

Nogal Canyon, volcanic rocks: Gentile, A. L.

Pierce Canyon redbeds, Delaware basin, biotite in reduction spots: Miller, D. N., Jr.

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Deformations, pre-Onate, southern: Flower, R. H., 4.

Dog Springs quadrangle: Givens, D. P.

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Fra Cristobal Mts., orogenic periods: Jacobs, R. C.

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Physical geology—Continued

- Grants uranium area, fracture controls: Mitcham, T. W., 2.
- Hospah oil field: King, V. L.
- Kilbourne Hole and Zuni Salt Lake cf. maar rims, Mexico: Shoemaker, E. M.
- Lava beds and ice caves, popular account: Porter, H. W.
- Major structures, southeastern: Stipp, T. F., 2.
- Nacimiento Mts. and San Juan Basin, geologic history: Parker, J. W.
- Pelican area, Palomas district, faults: Jahns, R. H., 1.
- Peloncillo Mts.: Gillerman, E.
- Puertecto quadrangle: Tonking, W. H.
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- Raton basin: Johnson, Ross B.; Osborne, H. W., 1.
- Rio Grande depression, Santa Fe to Taos, tectonics: Kelley, V. C., 1.
- Roswell artesian basin: Bean, R. T., 1.
- Sangre de Cristo Mts., southern, stream characteristics: Miller, J. P.
- Tectonics: Baltz, E. H., Jr.; Gabelman, J. W., 1.
- Sierra Grande uplift: Neller, W. D.
- Solution-subsidence troughs, Gypsum plain: Olive, W. W., 2.
- Turkey Mtn. dome, possible igneous origin: Hayes, P. T., 3.
- Walnut Wells quadrangle: Alper, A. M., 2.
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- Chihuahuah lake system, playas, southwestern: Zeller, R. A., Jr.
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- Border Belt gneisses, Adirondack Mts.: Balsley, J. R., Jr., 7.

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- Construction materials, Brier Hill quadrangle: Dietrich, R. V., 2.
- Oil and gas, Devonian, southwestern: Whorton, C. D., 1.
- Regional basins, possibilities: Kreidler, W. L., 2.
- Pyrite, St. Lawrence and Jefferson Counties: Prucha, J. J.
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Geologic maps.

- Brier Hill quadrangle: Dietrich, R. V., 2.
- Chazy-Rouses Point area: Stone, D. S.
- Copake quadrangle: Weaver, J. D.
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- Putnam County, bedrock: Grossman, I. G.
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Ground water.

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Historical geology.

- Allegany County, Devonian and Pleistocene: Muller, E. H., 1.
- Bear Mtn. area, potassium-argon ages, Precambrian-Paleozoic relation: Carr, D. R.
- Catskill delta, Devonian, Wellsville area: Rickard, L. V., 2.
- Devonian-Mississippian: Greiner, H. R.
- Cayuga Lake drainage basin, filled gorges, tills, radiocarbon ages: Muller, E. H., 3.
- Chautauqua County, Devonian, deep wells, lithology and correlation: Tesmer, I. H.
- Chazy-Rouses Point area, Ordovician breccias: Stone, D. S.
- Copake quadrangle, Taconic sequences, Cambrian-Ordovician: Weaver, J. D.
- Gardiners clay, Pleistocene, Long Island, cf. continental-shelf cores: Athearn, W. D.
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- Lower quartzite, stratigraphic problem, southeastern: Norton, M. F.
- Mohawkian series, Ordovician, Wells outlier, biostratigraphy: Fisher, D. W., 1.
- Putnam County: Grossman, I. G.
- Schoharie formation, Devonian, redefinition: Johnsen, J. H.
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Historical geology—Continued

- Taconic region, Cambrian-Ordovician, klippe problem: Bucher, W. H., 2.
- Vernon shale, Silurian, type area: Fisher, D. W., 2.
- Washington County, Cambrian, correlation: Theokritoff, G.
- Wellsville area, Devonian-Pennsylvanian: Rickard, L. V., 1.

Mineralogy.

- Allanite, Schroon Lake area: Rowley, E. B.
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Paleontology.

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- Brachiopods, *Cyrtospirifer*, Catskill delta, Devonian-Mississippian: Greiner, H. R.
- Crustacean, anaspid, Moscow formation, Devonian: Wells, J. W., 2.
- Gowanda formation, Devonian, Alfred Station area: Howell, B. F., 5.
- Ferns, Oneonta formation and Delaware River sandstone, Devonian: Beck, C. B.
- Invertebrates, Vernon shale, Silurian, type area: Fisher, D. W., 2.
- Long Island, Pleistocene, continental-shelf cores, Gardiners clay assemblages: Athearn, W. D.
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- Ostracodes, Ludlowville formation, Devonian: Copeland, M. J., 4; Kesling, R. V., 3.
- Popular account, western: Heubusch, C. A.
- Rochester area, Silurian-Devonian, collecting: Eaton, R. M.
- Wellsville area, Devonian fauna: Rickard, L. V., 1.

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- Adirondacks, Precambrian granitic rocks, analyses: Buddington, A. F., 2.
- Border Belt gneisses, Adirondack Mts., remanent magnetism: Baisley, J. R., Jr., 7.
- Breccias, Chazy-Rouses Point area: Stone, D. S.
- Brier Hill quadrangle, Precambrian: Dietrich, R. V., 2.
- Grenville gneiss, St. Lawrence and Jefferson Counties, pyrite mineralization: Prucha, J. J.
- Hamilton County, gneisses: Bartholomé, P. M.
- Lake Ontario plain, glacial till: Kaiser, R. F.

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Petrology—Continued

- Lake Sanford district, titaniferous magnetite: Gillson, J. L., 1.
- Long Island, clay-silt cores from continental shelf cf. Gardiners clay: Athearn, W. D.
- Putnam County: Grossman, I. G.
- Schroon Lake area, intrusions and metamorphism: Rowley, E. B.

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- Chazy-Rouses Point area: Stone, D. S.
- Copake quadrangle, Taconic klippe: Weaver, J. D.
- Hamilton County, metamorphism: Bartholomé, P. M.
- Kinderhook quadrangle, Taconic klippe: Craddock, J. C.
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- Allegany County, glaciation: Muller, E. H., 1.
- Shawangunk Range, relation to structure: Friedman, J. D.

Newfoundland. *See also* Labrador.

- Mining geology, Wabana iron mines, structural conditions: Norris, D. K., 2.

Areas described.

- Conche-Northern Grey Island area: Baird, D. M., 1.
- Red Indian Lake area: Canada G.S., 21.

Economic geology.

- Fluorite, St. Lawrence district: Williamson, D. H.
- Gypsum, southwestern: Baird, D. M., 2.
- Iron, Wabana beds, Conception Bay: Lyons, J. C.
- Magnesite, Gander River area: Cooper, G. E., 2.
- Mineral deposits, Dildo area: Canada G.S., 14.
- Port aux Choix-Castor River area, possibilities: Woodard, H. H., 1.
- Mineral resources, popular and elementary: Baird, D. M., 5.
- Pyrophyllite, Manuels area: Baird, D. M., 3.
- Strontium, Port au Port Peninsula: Baird, D. M., 4.
- Tungsten, Grey River area: Bahyrycz, G. S.

Geologic maps.

- Betts Cove-Tilt Cove area: Neale, E. R. W.
- Conche-Northern Grey Island area: Baird, D. M., 1.
- Dildo area: Canada G.S., 14.
- Gander Lake area, east half: Canada G.S., 17.

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- Gander River area: Cooper, G. E., 2.
 Port aux Choix-Castor River area:
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 St. Lawrence fluorite district, sketch:
 Williamson, D. H.
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 boniferous: Baird, D. M., 1.
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 Mississippian - Pennsylvanian, south-
 western: Baird, D. M., 2.
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 Port aux Choix-Castor River area, Pre-
 cambrian-Ordovician: Wood-
 ard, H. H., 1.
 Tectonic history: Marienfeld, F.-W.
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 ception Bay: Lyons, J. C.

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- Popular and elementary: Baird,
 D. M., 5.
 Tilting igneous complex, Fogo Island:
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 boniferous: Baird, D. M., 1.
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 Gander River magnesite areas: Cooper,
 G. E., 2.
 Grey River area, metamorphism: Bahy-
 rycz, G. S.
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 Port aux Choix-Castor River area, Cam-
 brian: Woodard, H. H., 1.
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 rycz, G. S.
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 faults: Woodard, H. H., 1.
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 Norris, D. K., 2.

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Petrology—Continued

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