

Information Series 21

**Bibliography and  
Index of  
Colorado Geology  
1983**

**by  
American  
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Colorado Geological Survey  
Department of Natural Resources  
Denver, Colorado / 1987

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*Holocene:* Paleoenvironmental interpretations of Holocene insect fossil assemblages from the La Poudre Pass site, northern Colorado Front Range (Elias, S. A.)

### Insecta--Blattopteroidea

*Carboniferous:* The variability of the wings of Paleozoic Blattodea, Insecta; Part 1 (Schneider, Jorg)

### Insecta--faunal studies

*Pleistocene:* Paleoenvironmental interpretation of bark beetle fossils from two high altitude sites in the Colorado Rockies (Elias, S. A.)

### Insecta--miscellanea

*Oligocene:* Latest Oligocene insects from the Creede Caldera in southwestern Colorado (Cuffey, R. J.)

### instruments see under field

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### intrusions see also igneous

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### intrusions--age

*absolute age:* Timing of mineralization and related intrusive activity near Central City, Colorado

(Rice, C. M.)

### intrusions--batholiths

*zoning:* Granite and rhyolite relationships of the Lake City Caldera area, Hinsdale County, Colorado (Ernst, Robert P.)

### intrusions--composition

*alkalic composition:* Mineral deposits associated with alkaline intrusive complexes; examples from Wyoming, Colorado, Montana, and California (Armbrustmacher, Theodore J.)

### intrusions--dikes

*tuff:* Results of the geologic mapping program during shaft sinking and subsequent station development at C-B track (Stellavato, Nick)

### intrusions--emplacement

*age:* Bedrock geology of western Taylor Park, Gunnison County, Colorado (Bailey, Mark H.)

### intrusions--geochemistry

*genesis:* Geology and geochemistry of uranium mineralization in rhyolites of the Nellie Creek area, Hinsdale County, Colorado (Gibbs, William Kirk, Jr.)

### intrusions--petrology

*mineral resources:* Laramide-Tertiary intrusive rocks of Colorado (Young, Edward J.)

### intrusions--pipes

*breccia pipes:* A cryptovolcanic breccia pipe at Jack Flats, Eagle County, Colorado (Schneider, Jill L.)

*kimberlite:* Diamond-bearing kimberlite pipes in Wyoming and Colorado (Hausel, W. Dan)

### intrusions--plutons

*distribution:* Thermal effects on sedimentary organic matter and recognition and mapping of subjacent igneous plutons, Ruby Range, Colorado (Baker, Donald R.)

*geochemistry:* Redskin Granite; a rare-metal-rich Precambrian pluton, Colorado, USA (Desborough, G. A.)

**intrusions--ring complexes***alkalic composition:*

Genetic implication of minor-element and Sr-isotope geochemistry of alkaline rock complexes in the Wet Mountains area, Fremont and Custer counties, Colorado (Armbrustmacher, Theodore J.)

**intrusions--stocks***paleomagnetism:*

Paleomagnetism and aspects of structural deformation of the Red Mountain intrusive complex (Urad/Henderson molybdenum deposits), Empire, Colorado (Graaskamp, Garret W.)

*petrology:* Geology and mineralization of the Paradise Stock, Gunnison County, Colorado (Pillmore, Kathryn A.)

**Invertebrata see also**

Arthropoda; Echinodermata; foraminifera; ichnofossils; Insecta; Mollusca; problematic fossils

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**iron--geochemistry**

*soils:* Effect of redox on the solubility and availability of iron (Schwab, A. P.)

-- Estimation of the concentration of Fe/3+ and the (Fe/3+)(OH/-)/3 ion product from equilibria EDTA in soil (Norvell, W. A.)

**isotope dating see absolute age****isotopes see also absolute age; geochronology****isotopes--abundance**

*crystalline rocks:* Isotopic composition of uranium and thorium in crystalline rocks (Rosholt, John N.)

**isotopes--analysis**

*soil gases:* Seasonal and short-term variations in gas emission at an aseismic site (Jaacks, J. A.)

**isotopes--carbon**

*C-13/C-12:* Geochemical and paleobiological evidence for the submarine spring origin of carbonate mounds in the Pierre Shale (Cretaceous) of Colorado (Arthur, M. A.)

-- Origin of natural gases in San Juan basin (Rice, D. D.)

-- Relation of natural gas composition to thermal maturity and source rock type in San Juan Basin, northwestern New Mexico and southwestern Colorado (Rice, Dudley D.)

-- Terrestrial influence and bioturbation effects on composition of organic matter in Middle Cretaceous shale and limestone sequence near Pueblo, Colorado (Pratt, Lisa M.)

**isotopes--coal***radioactive isotopes:*

Secular equilibrium of radium in Western coal (Casella, V. R.)

**isotopes--hydrogen**

*D/H:* Deuterium content of lignin and of the methyl and OH hydrogen of cellulose (Friedman, Irving)

**isotopes--igneous rocks**

*ratios:* The chemical and isotopic record of rock-water interaction in the Sherman Granite, Wyoming and Colorado (Zielinski, R. A.)

**isotopes--lead**

*Pb-206/Pb-204:* A lead isotope study of mid-Tertiary ignimbrites and lavas from the Sierra Madre Occidental, Chihuahua, Mexico (Barreiro, Barbara A.)

*ratios:* Silver Plume Granite-a possible source of uranium, Tallahassee Creek deposits (Hills, F. A.)

**isotopes--metal ores**

*stable isotopes:* A compilation of fluid inclusion and stable isotope data on selected precious- and base-metal epithermal deposits (Hayba, D. O.)

**isotopes--petroleum**

*tracers:* Surface radiometric mapping in oil and gas exploration (Morse, Jerome G.)

**isotopes--sedimentary rocks**

*ratios:* Geochemical and sedimentologic indicators of depositional environments and diagenetic trends in the Niobrara Formation (Upper Cretaceous), Colorado and

Kansas (Arthur, M. A.)

-- Sedimentologic and diagenetic history of reservoirs in Niobrara Formation, Denver basin (Pollastro, R. M.)

**isotopes--strontium**

*Sr-87/Sr-86:* Genetic implication of minor-element and Sr-isotope geochemistry of alkaline rock complexes in the Wet Mountains area, Fremont and Custer counties, Colorado (Armbrustmacher, Theodore J.)

**isotopes--uranium ores**

*stable isotopes:* Ore emplacement in the Schwartzwalder mine, Jefferson County, Colorado (Anonymous)

**joists see under style under fractures**

**Jurassic see also under stratigraphy; see also under stratigraphy under Rocky Mountains**

**land use see also under environmental geology; pollution**

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**lava see also igneous rocks; magmas**

**lava--petrology**

*lava flows:* Geology and geochemistry of basalts from Fishers Peak Mesa, Colorado (Ryan, Timothy H.)

**lead--geochemistry**

*soils:* Copper, molybdenum, lead, and silver in soils of the Bonanza Caldera, San Juan volcanic field, Colorado (Pride, Douglas E.)

**lead--isotopes**

*Pb-206/Pb-204:* A lead isotope study of mid-Tertiary ignimbrites and lavas from the Sierra Madre Occidental, Chihuahua, Mexico (Barreiro, Barbara A.)

*Pb-210:* Surface radiometric mapping in oil and gas exploration (Morse, Jerome G.)

*ratios:* Silver Plume Granite-a possible source of uranium, Tallahassee Creek deposits (Hills, F. A.)

**lead-zinc deposits see also under economic geology under**

- Rocky Mountains
- lebensspuren** *see under*  
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- lithium--analysis**  
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- lithium ores** *see also under*  
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- magmas** *see also* igneous rocks;  
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- magmas--composition**  
*mafic composition*: A  
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*ultramafic composition*:  
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- uranium ores*: Geology and  
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- magmas--differentiation**  
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- magmas--evolution**  
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- magmas--genesis**  
*partial melting*: Petrology  
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- magmas--geochemistry**  
*metals*: Petrology,  
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*sulfur*: Igneous sulfides in  
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- magnetic surveys** *see under*  
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- magnetism of rocks and**  
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*Paleocene*: A new species  
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- Mammalia--Perissodactyla**  
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- Mammalia--Primates**  
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- manganese--geochemistry**  
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- mapping** *see* maps
- maps** *see also under* areal  
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- metal ores--genesis**  
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- phase equilibria:*  
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- metals--geochemistry**  
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- metamorphic rocks** *see also* igneous rocks; metamorphism; metasomatism
- metamorphic rocks--lithostratigraphy**  
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*Proterozoic:* Las Animas Formation (upper Precambrian) in the subsurface of southeastern Colorado (Tweto, Ogden)
- metamorphic rocks--metaigneous rocks**  
*genesis:* Origin of middle Proterozoic granitic and rhyolitic rocks in the Midcontinent region of North America (Bickford, M. E.)  
*metabasalt:* U-Pb geochronology and petrology of Proterozoic volcanic and plutonic rocks in central Colorado (Boardman, S. J.)
- metamorphic rocks--metasedimentary rocks**  
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*mineral composition:* Bedrock geology of western Taylor Park, Gunnison County, Colorado (Bailey, Mark H.)
- metamorphic rocks--migmatites**  
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- metamorphic rocks--mineral assemblages**  
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- metamorphism** *see also* metamorphic rocks; metasomatism
- metamorphism--contact metamorphism**  
*organic materials:* Thermal effects on sedimentary organic matter and recognition and mapping of subjacent igneous plutons, Ruby Range, Colorado (Baker, Donald R.)
- metamorphism--P-T conditions**  
*low pressure:* Early Proterozoic metasediments from north-central Colorado; metamorphism, provenance, and tectonic setting (Condie, Kent C.)
- metasomatic rocks** *see also* igneous rocks; metamorphic rocks; metamorphism; metasomatism
- metasomatic rocks--greisen**  
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- metasomatic rocks--skarn**  
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- metasomatism** *see also* metamorphism; metasomatic rocks
- metasomatism--processes**  
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- meteor craters** *see also* meteorites
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*Johnston Meteorite:* Mineralogy, petrology, and trace element geochemistry of the Johnstown Meteorite; a brecciated orthopyroxenite with siderophile and REE-rich components (Floran, R. J.)
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- mineral deposits, genesis--concepts**  
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- mineral deposits, genesis--controls**  
*hydrogeological controls:* Depositional setting of the Salt Wash Member of the Morrison Formation, Southwest Colorado (Tyler, Noel)  
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- The Fortune vein group and associated Manto orebodies, Resurrection Mine area, Northeast Leadville mining district, Colorado (Jonson, David)
- mineral deposits, genesis--copper ores**  
*igneous processes:* Petrology, geochemistry, and genesis of the A.O. porphyry copper complex in Jackson and Grand counties, northwestern Colorado (Karimpour, Mohammad Hassan)
- mineral deposits, genesis--metal ores**  
*age:* Timing of mineralization and related intrusive activity near Central City, Colorado (Rice, C. M.)  
*epithermal processes:* A compilation of fluid inclusion and stable isotope data on selected precious- and base-metal epithermal deposits (Hayba, D. O.)  
*mineralization:* Precambrian tungsten and copper-zinc skarn deposits of South-central Colorado (Heinrich, E. William)  
*processes:* Geology of the Mississippian Leadville Limestone; Fulford area, Eagle County, Colorado (Richards, Billy D.)  
*structural controls:* Geology and economic geology of the Upper Cunningham Gulch, Southeast Silverton,

- Colorado (Bazrafshan, Khosrow)
- mineral deposits, genesis--mineral resources**  
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- mineral deposits, genesis--polymetallic ores**  
*structural controls:* Mineral exploration with Skylab photography in central Colorado (Prost, Gary)
- mineral deposits, genesis--processes**  
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*hydrothermal processes:* Mineralization along the southern Amethyst Vein, Creede District, Colorado (Robinson, Richard)  
*igneous processes:* Geology of the Leadville mining district (Thompson, Tommy)
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- mineral deposits, genesis--silver ores**  
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*structural controls:* Ore mineralogy and fluid inclusion study of the southern Amethyst vein system, Creede Mining District, Colorado (Robinson, Richard W.)
- mineral deposits, genesis--uranium ores**  
*controls:* Field, model, and computer simulation study of some aspects of the origin and distribution of Colorado Plateau-type uranium deposits (Ethridge, Frank G.)  
*hydrothermal processes:* Alteration and vein mineralization, Schwartzwalder uranium deposit, Front Range, Colorado (Wallace, Alan Ryon)  
*processes:* Early Proterozoic origin for uranium mineralization in the Colorado Front Range (Nelson, C. E.)
- structural controls:** Structural and mineralogical characteristics and distribution of carbonate-dominated fault breccias associated with uranium deposits, Front Range, Colorado (Wallace, Alan Ryon)
- mineral exploration--geochemical methods**  
*automatic data processing:* Computer mapping of soil and rock geochemistry; a comparison using data from the Breckenridge mining district, Colorado (Hasenohr, E. J.)  
*data:* Geochemical analyses of rock, stream-sediment, and heavy-mineral concentrate samples collected from the Spanish Peaks Wilderness Study Area, Huerfano and Las Animas counties, Colorado (Budding, K. E.)  
*fluorspar:* Fluorine in a closed drainage basin, Saguache and Alamosa counties, Colorado (Van Alstine, R. E.)  
*metal ores:* Mineral resources of the Comanche-Big South, Neota-Flat Top, and Never Summer Wilderness Study Area, north-central Colorado (Pearson, R. C.)  
*ore guides:* An evaluation of stream sediment and heavy mineral concentrate geochemistry as aids in geologic mapping and mineral exploration in northern Colorado (Allen, Michael Steven)  
*stream sediments:* Analysis of stream sediment reconnaissance data for mineral resources from the Montrose NTMS quadrangle, Colorado (Beyth, Michael)
- Geochemical and geostatistical evaluation, Arkansas Canyon planning unit, Fremont and Custer counties, Colorado (Weiland, E. F.)
- Identification of uraniumiferous granitoids in the USA using stream sediment geochemical data (Howarth, R. J.)
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- Stream-sediment geochemical survey of the Bureau of Land Management's Arkansas Canyon Planning Unit in south-central (Canon City area) Colorado (Weiland, E. F.)
- techniques:* Major, minor, and trace elements in samples from the Wheeler Wilderness Study Area, Colorado, as determined by inductively coupled argon plasma-atomic emission spectrometry (Crock, J. G.)
- trace elements:* Silver Plume Granite; possible source of uranium in sandstone uranium deposits, Tallahassee Creek and High Park areas, Fremont and Teller counties, Colorado (Hills, F. A.)
- uranium ores:* Uranium in Wheeler Basin, Grand County, Colorado (Young, E. J.)
- mineral exploration--geological methods**  
*metal ores:* Mineralization and other geologic factors related to the Morrison Formation in particular the northern two-thirds of the Colorado Plateau region; basic data and factor-analysis results (Cadigan, R. A.)
- mineral exploration--geophysical surveys**  
*gravity surveys:* Principal facts for gravity stations in parts of Grand, Clear Creek, and Summit counties, Colorado (Abrams, G. A.)  
*well-logging:* Drilling-mud emanometry, a new technique for uranium exploration (Bell, Mark W.)
- Potential uranium host rocks and structures in the central Great Plains (Zelner, E. J.)
- mineral exploration--methods**  
*uranium ores:* Cortez Quadrangle, Colorado and Utah (Campbell, John A.)
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- La Junta Quadrangle, Colorado and Kansas (McCarn, Dan W.)
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- Uranium anomalies in Wyoming and parts of adjacent states (Goodknight, C. S.)
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#### mineral exploration--ore guides

- metal ores*: Stratabound Precambrian sulfide deposits, Colorado and southern Wyoming (Sheridan, Douglas M.)
- uranium ores*: Structural and mineralogical characteristics and distribution of carbonate-dominated fault breccias associated with uranium deposits, Front Range, Colorado (Wallace, Alan Ryon)

#### mineral exploration--remote sensing

- diamonds*: Remote sensing exploration for poorly exposed kimberlite in the Colorado-Wyoming region (Marks, Janet E.)
- polymetallic ores*: Mineral exploration with Skylab photography in central Colorado (Prost, Gary)

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##### exploration--techniques

- stream sediments*: Stream sediment exploration sampling for kimberlite in Colorado-Wyoming, and techniques of diamond extraction (Brink, Carl)

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#### mineral resources see also under economic geology; see also under economic geology under Rocky Mountains

#### mineralogy

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- carbonates*: And they hunted rocks merrily, forever after (Lund, Merle)
- framework silicates, feldspar group*: Field trip; West Maroon Pass orthoclase (Hall, Denis)
- framework silicates, silica minerals*: Mount Antero crystal; the Colorado Hills are alive with the sounds of rock picks (Malocsay, Zoltan)
- miscellaneous minerals*: Across the San Juan Mountains (Rickard, T. A.)
- Across the San Juan Mountains (Rickard, T. A.)
- Rockhounding in the Colorado Rockies (Carson, Xanthus)
- phosphates*: April, 1936; Fluorescent minerals from little known localities (Seaman, David M.)
- Turquoise chief mine (Carson, Xanthus)
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- sulfates*: Turning barite into beryl (Morrison, Virginia)

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#### minerals--arsenates

- theisite*: Theisite, a new mineral from Colorado (Williams, S. A.)

#### minerals--carbonates

- calcite*: And they hunted rocks merrily, forever after (Lund, Merle)
- nahcolite*: An update of saline zone oil shale development (Weichman, Ben)

#### minerals--framework silicates, alkali feldspar

- orthoclase*: Field trip; West Maroon Pass orthoclase (Hall, Denis)

#### minerals--framework silicates, silica minerals

- quartz*: Mount Antero crystal; the Colorado Hills are alive with the sounds of rock picks (Malocsay, Zoltan)

#### minerals--miscellaneous minerals

- collecting*: Rockhounding in the Colorado Rockies (Carson, Xanthus)

#### minerals--occurrence

- collecting*: Across the San Juan Mountains (Rickard, T. A.)

- Across the San Juan Mountains (Rickard, T. A.)

#### minerals--phosphates

- collecting*: April, 1936; Fluorescent minerals from little known localities (Seaman, David M.)

- turquoise*: Turquoise chief mine (Carson, Xanthus)

#### minerals--ring silicates

- beryl*: Some magnificent beryls from the Proctor collection (Zeitner, June Culp)

- Turning barite into beryl (Morrison, Virginia)

#### minerals--sulfates

- barite*: Turning barite into beryl (Morrison, Virginia)

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- ground water*: Piceance Basin hydrology; aquitards and aquicludes (Tait, D. B.)

- Some questions on Piceance Basin hydrology (Birman, Joseph H.)

#### surface mining:

- Depositional environments of a surface coal mine in Northwest Colorado (Massoth, Terry W.)

#### mining geology--history

- mines*: Across the San Juan Mountains (Rickard, T. A.)
- photography*: Secure the shadow; Lachlan McLean, Colorado mining photographer (Smith, Duane A.)

#### mining geology--methods

- monitoring*: Aquifer dewatering and drawdown at an open mine pit in northwestern Colorado (Saunders, Geoffrey P.)

- Case history; ground-water monitoring at an underground coal mine in West Central Colorado (Kimball, Dan B.)

- Hydrologic and engineering considerations for ground-water monitoring wells at oil shale mines, Piceance and Uinta basins, Colorado and Utah (Miller, Glen A.)

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#### mining geology--practice

- pollution*: Environmental and health consequences of shale oil production in the USA (Chappeil, Willard)

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- Mississippian** see also under stratigraphy
- Mollusca--Ammonoidea**  
*Cretaceous:* The ammonites of the Pierre sea (Upper Cretaceous) in the Western U.S. (Hirsch, K. F.)
- mollusks--ammonoids**  
*Cretaceous:* Upper Cretaceous stratigraphy and tectonic history of the Ridgway area, northwestern San Juan Mountains, Colorado (Weimer, Paul C.)
- mollusks--biostratigraphy**  
*Cretaceous:* Mid-Cretaceous molluscan biostratigraphy and paleogeography of south-western part of Western Interior, United States (Cobban, W. A.)  
*Jurassic:* Jurassic (Oxfordian and late Callovian) ammonites from the Western Interior region of the United States (Imlay, R. W.)
- molybdenum--geochemistry**  
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- molybdenum ores** see also under economic geology; see also under economic geology under automatic data processing
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- museums--mineralogy**  
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- natural gas** see also under economic geology
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- neotectonics** see also under structural geology
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- noble gases** see also helium; radon
- North America** see also Great Plains; Rocky Mountains
- North Dakota--economic geology**  
*coal:* Permits handbook for coal development (Wayman, Cooper H.)
- North Dakota--environmental geology**  
*impact statements:* Missouri River basin water resources management plan; A comprehensive, coordinated, joint plan for water and related land resources and draft environmental impact statement; Appendix H, Water resources problems and opportunities; Appendix G, State planning objectives (Missouri River Basin Commission)
- Remedial action standards for inactive uranium processing sites (40 CFR 192); Volumes 1 and 2 (U. S. Environmental Protection Agency, Office of Radiation Programs)
- reclamation:* Reclamation of mined lands in the western coal region (Narten, P. F.)
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  - conglomerate:** Sedimentology and tectonic implications of Oligocene Castle Rock Conglomerate, southern Denver Basin, Colorado (Morse, David G.)
  - environmental analysis:** Stratigraphy of the Dakota and Burro Canyon formations near Gunnison, Colorado (Thomas, Mark H.)
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- sedimentary rocks--organic residues**  
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 -- Petrography and fluorescence properties of bituminous coals of the Spanish Peaks region, Colorado (Dutcher, Russell R.)  
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- (Blodgett, Robert H.)  
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  - Foraminiferal biostratigraphy and paleobathymetry of the Pierre Shale, Colorado, Kansas and Wyoming (Bergstresser, Thomas James)
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- Roeber, M. M., Jr. A summary of the geology and ore deposits of the Bulldog Mountain Mine, Creede mining district, San Juan Mountains, Mineral County, Colorado

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