

## COMMON SOUTH DAKOTA ROCKS AND MINERALS

### MINERALS

Galena	Biotite	Apatite
Native Copper	Lepidolite	Amphibole Group
Gold	Calcite	Pyroxene Group
Limonite	Barite	Feldspar Group
Arsenopyrite	Witherite	Columbite
Pyrite	Dolomite	Tantalite
Marcasite	Cerussite	Chalcedony
Hematite	Siderite	Quartz
Magnetite	Sphalerite	Jasper
Gypsum	Wolframite	Agate
Melanterite	Fluorite (Fluorspar)	Spodumene
Carnotite	Scheelite	Garnet Group
Muscovite	Smithsonite	Tourmaline
		Beryl

### COARSE-GRAINED ROCKS

Gneiss	Quartzite
Schist	Conglomerate
Granite	Breccia
Gabbro	Glacial till
Peridotite	Gravel
Syenite	Sand
Porphyry	Sandstone

### FINE-GRAINED ROCKS

Chert	Silt
Felsite	Siltstone
Basalt	Shale
Quartzite	Mudstone
Clay	Slate
	Tripoli

### ORGANIC ROCKS (Dark Colored)

Peat
Muck
Coal
Bituminous shale

### STATE MINERAL

Rose quartz, discovered near Custer in the 1800's, is the official state mineral. Its primary use is in ornaments and jewelry.

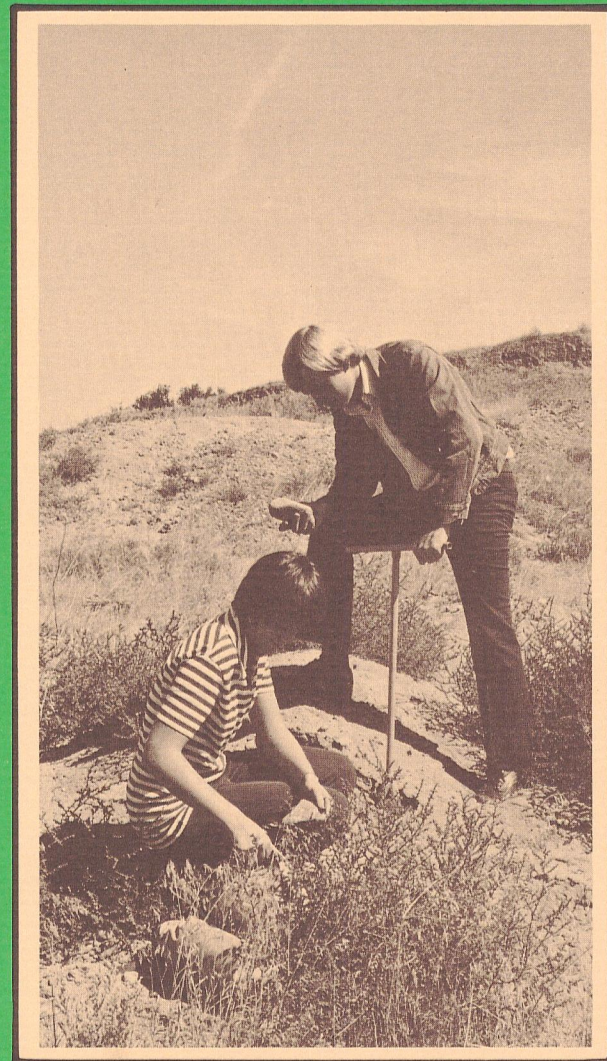
### STATE GEMSTONE

The Fairburn Agate is a semi-precious stone first found near the town of Fairburn. A large belt extending from Farmingdale, S.D. to Orella, Neb., is the major source of the state stone. It is used primarily for jewelry and is a prize for rock collectors.

For additional information, contact: State Geologist  
South Dakota Geological Survey  
Science Center, University  
Vermillion, South Dakota 57069

The South Dakota Division of Tourism, Joe Foss Bldg., Pierre, S.D., 57501, has produced 50,000 copies of this Rockhound Guide at a per item cost of \$.028, for the purpose of Tourism promotion.

# South Dakota Rockhound Guide



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South Dakota is acknowledged to be a virtual paradise for those who are interested in rocks, minerals, gemstones and fossils. It is also one of the major areas for studying field geology. The Black Hills, the nation's oldest mountains, ranks among the top five localities in the United States for variety of minerals. Well known is the nation's largest gold mine, the Homestake at Lead, but there are also many other historic mines in the Hills. These have produced copper, silver, lead, tin, feldspar, spodumene, beryl, mica and quartz, besides gold and numerous rare minerals, including some newly discovered phosphates. Record sizes of crystals have been recorded here such as the 90 ton spodumene crystal from near Keystone. The spectacular granite needles and other rock outcrops demonstrate that even the magnificent scenery of the Black Hills depends on rock.

Perhaps there is more rose quartz found in Black Hills mines than any other area in the world. So popular is this attractive pink gem mineral that it has been named the official mineral of the State of South Dakota. There are also vast deposits of iron, alabaster, gypsum and limestone in the Black Hills. The alabaster and gypsum are found in the red clays surrounding the Hills. The principal limestone canyons are in the western part of the Black Hills near the Wyoming border. In these scenic canyons are deposits of vivid agate, with the multi-colored Tepee Canyon agate being most popular. Some of the nation's most dramatic caves, sparkling with calcite and aragonite, also are hidden in the limestone area.

In addition to the mines, which are located in the igneous coarse granite, and the fossils and agates in the sedimentary limestone, there are vast areas of metamorphic rock like the shining mica schist so common near Mount Rushmore. Small brilliant garnets and strangely shaped staurolite crystals are found in this schist near Custer.

The widespread Badlands of western South Dakota offer the visiting rockhound many thousands of acres of interesting collecting for a wide spectrum of colorful gem materials. Most sought after is the brightly patterned Fairburn agate, the official State Gem, an elusive and distinctive fortification agate. Associated with the Fairburns, in the same alluvial deposits, are gay prairie agates, funny eye agates, rich jasper, red carnelian, picturesque moss agate, blue chalcedony, puddingstone conglomerate, and quantities of rainbow-hued petrified wood.

The rock beds are scattered in the eroded areas near Kadoka, Interior, Scenic, and Fairburn. Many of these Badlands areas, where collecting is allowed, are administered by the National Grasslands. Collecting is not allowed however in the Badlands National Monument, an area including some of the most spectacular formations, which has been set aside for the public to enjoy in its natural state. Some of the smaller eroded outlying Badlands are on privately owned ranches, and collectors must secure permission from the landowners.

The Badlands National Monument constitutes the nation's

greatest storehouse for vertebrate fossils. The remains of unbelievable animals have been found here, many in remarkable preservation. Among these are the titanotherium, the camel, the saber toothed tiger, and the tiny three-toed horse. It is illegal for amateurs to collect vertebrate fossils on public lands.

Small invertebrate fossils such as corals, belemnites, scaphites and baculites are widely distributed, as well as many plant fossils. South Dakota's most beautiful and fascinating plant fossil is the cycad, a pineapple shaped plant which was ancestor of both palm and pine, and was earth's first flowering plant. Pieces of cycad, fern, redwood, and other exotic plants are found in the Badlands and in the Hills.

The gray shale exposures common in western South Dakota, known as the Pierre Shale, are the remains of the Cretaceous seas which covered this region about 100 million years ago. This formation is dotted with concretions containing marine fossils, calcite crystals, and sometimes barite crystals. Prominent too are the gray-green Chadron formation where some good rocks are found, and the buff colored Brule, also of interest to collectors. The Dakota formation is noted for large quantities of petrified wood.

Several areas of western South Dakota have uranium deposits. Lignite is found in the northern part of the state. Considerable collecting for wood, pyrite, selenite, and marine fossils is done along the larger rivers of the western part of the state, all tributaries of the Missouri. Gravel pits and road metal quarries are productive along the Cheyenne River, the White River, the Bad River, the Grand River and the Moreau River.

In the Eastern part of the state the huge granite quarries at Milbank are important, particularly for the excellent quality deep red granite, sometimes called mahogany granite. The rose-red Sioux quartzite found near Sioux Falls is a widely accepted building stone. Lake Superior agates are found near the lakes and streams of the glaciated district of the east. Another mineral found near Sioux Falls is the brick colored catlinite, the revered pipestone of the Sioux.

For those who would like to try collecting in this state, the Geological Survey at the University of South Dakota, Vermillion, has several publications. Write for the price list. Forest service maps, available at the Regional Forest Service Offices from Pierre, Wall, or Hot Springs, will be a great help to the collector. Officers of local gem and mineral societies affiliated with the American Federation of Mineralogical Societies will also have additional information. There are over 20 such clubs in South Dakota, located in most major cities. Also time spent in the Museum of the South Dakota School of Mines in Rapid City will help with field identification later.

South Dakota welcomes rockhounds. There is truly something of interest here for everyone interested in the earth sciences, whether you are looking for rocks for a rock garden, agates to cut and polish, or just an attractive specimen to set on your shelf to remind you of an outstanding rockhound vacation.

