FRONT COVER
"Dog-tooth spar" is the name given to sharply pointed crystals of white **calcite** as seen on this massive piece of gray limestone from Mahaska County. Also prominent are brass-colored masses of **pyrite** crystals, known as "fools gold."

Photo by Tim Kemmis

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MINERALS

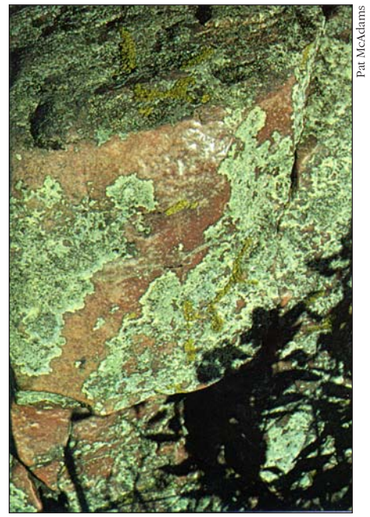
OF IOWA

Minerals are the building blocks of the Earth's rocks. They have a specific chemical composition and a characteristic crystal form. The Iowa minerals shown here display an intriguing range of color and shape.

Many people are first introduced to the field of geology through the fun of searching for and collecting minerals. Beautiful varieties can be found in Iowa's sedimentary rocks that outcrop in road cuts, quarries, strip mines, and along natural stream banks or valley sides. Eye-catching crystals compose many coarse-grained igneous and metamorphic cobbles and boulders that lie in pastures and farm fields where they were left by melting glaciers. Gravel pits along Iowa's valleys and gravel bars within river channels are also good places to find a wide assortment of mineral specimens.

In addition to their crystalline beauty, information about a mineral's geologic age and origins can be obtained from its chemical isotopes and from its association with other minerals. Mineral resources play a significant role in our daily lives, and Iowa's mineral industries are a valuable contributor to the state's economy.

*This impressive **stalactite** is from a cave in Winneshiek County. Such cave decorations are composed of the mineral **calcite**, and are deposited in distinctive shapes by the slow dripping of lime-rich groundwater.*



Pat McAdams

*This wind polished and lichen covered rock of Sioux **Quartzite** is from Lyon County in northwest Iowa. Quartzite is composed of compacted **quartz** grains cemented together with **silica**, giving the rock a glassy appearance and a hard surface. Its resistance to weathering makes it useful as highway and railroad aggregate.*

*Pointed crystals of white **calcite** and translucent yellow cubes of **fluorite** edge this gray limestone collected near Postville in Allamakee County. Calcite (calcium carbonate) is the common mineral in limestone, while fluorite is rare. Such crystal growths are found along open vugs and fracture traces within the rock.*

Tim Kemmis

***Geodes** have a drab rounded exterior with a hard outer layer and partially hollow interior lined with inwardly projecting mineral crystals. This large geode, containing pink and gray **calcite** and glassy **quartz** crystals, was collected near Keokuk from the Warsaw Shale, a rock formation that outcrops along stream beds in Iowa's southeastern counties.*

Galena *has a distinct metallic-gray luster and a cube-shaped crystal form. It is quite heavy and is the principal ore of* ***lead****. This mass of crystals is from Dubuque County, where lead ores were mined for over 300 years from veins in the dolomite bedrock.*

Barite *is an unusually heavy mineral. This Fayette County sample is composed of curved masses of radiating crystals. Barite is used in the manufacture of paints and drilling muds.*

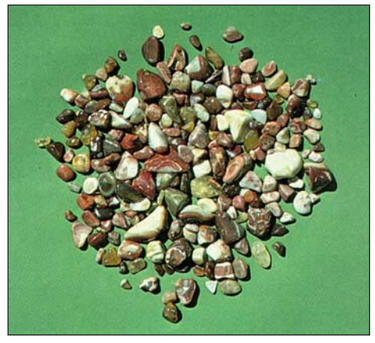
The tall slender crystal of ***gypsum,*** *a variety known as* ***selenite,*** *is from Appanoose County. It has a soft, easily scratched surface. Below it is a specimen of banded gypsum from the Fort Dodge area. Gypsum is mined in Webster and Des Moines counties for wallboard production.*

This pyramid crystal of translucent ***calcite*** *is from Mahaska County. Calcite is the principal mineral in limestone, chalk, and marble. It occurs in a variety of colors and bubbles vigorously when a drop of dilute hydrochloric acid is applied.*

Coal *is a combustible rock, rich in* ***carbon*** *and formed by compaction of fossil plant remains similar to peat. Thin veins in this piece are filled with* ***pyrite****. Coal was mined from seams in the Pennsylvanian-age rocks of south-central Iowa, with peak production during the early 1900s.*

Heavy nuggets of native ***copper****, a good conductor of heat and electricity, are found on rare occasions in Iowa's glacial deposits. This 67-pounder, tarnished with greenish oxides, probably originated in the Lake Superior region of Michigan's Upper Peninsula.*

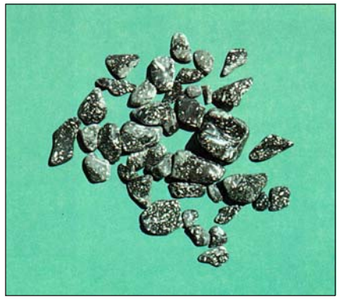
Feldspar *is a widespread mineral, especially common in igneous rocks such as granite. This fragment of crystalline feldspar was found in gravels along the Cedar River in Linn County. It probably weathered out of a granite boulder carried into Iowa by a glacier.*



These ***agates*** *(varieties of dense but translucent* ***quartz****,* ***chalcedony****, and* ***opal****) are from Mississippi River gravel deposits in Clayton County and have been tumbled to a high polish. They include the prized Lake Superior agates, known for their fine alternating bands of rich colors.*

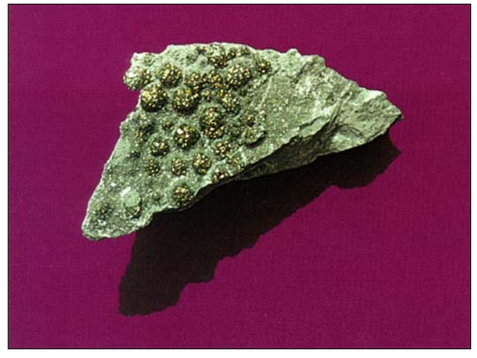
Petrified wood *can be collected from glacial-age gravels along Iowa's rivers. This water-worn piece from the Cedar River in Linn County shows* ***silica****, in the form of* ***chalcedony*** *or* ***opal****, has replaced the original tissue. Tan and brown bands reveal the original wood grain.*

Limonite *is a distinctively yellowish brown ore of* ***iron****. It takes many forms, including the cellular structure seen in this sample from the historic Iron Hill area near Waukon in Allamakee County.*



Known to mineral collectors as ***"rice agate,"*** *these polished stones of black* ***chert (flint)*** *consist of a dense variety of* ***silica*** *found in the sedimentary rocks of Montgomery County. The "rice" pattern comes from numerous white shells of fossil fusulinids, a tiny marine protozoan.*

Metallic clusters of ***pyrite*** *crystals ("fool's gold") form bumps on this piece of limestone collected in Black Hawk County. The pattern of mineral clusters is a result of mineral growth in the honeycombed openings of a fossil colonial coral within the limestone.*



Non-credited photos by Paul VanDorpe
Photo setups by Patricia Lohmann