

GEOLOGIC SOURCES OF HISTORIC STONE ARCHITECTURE



IN IOWA

FRONT COVER

Clusters of quartz crystals, especially rose, white, smoky and amethyst varieties were used to decorate this wall in the Grotto of the Redemption at West Bend in Palo Alto County. This view also includes blue-green copper minerals, red jasper, pyrite (“fool’s gold”), mounds of white chalcedony, sea shells, and small geodes. The Grotto was hand-built of an extraordinary array of high-quality specimens brought to the Iowa countryside by Father Paul Dobberstein between 1912 and 1954.

Photo by Paul VanDorpe



Iowa Department of Natural Resources
Geological Survey Bureau
109 Trowbridge Hall
Iowa City, Iowa 52242-1319
www.igsb.uiowa.edu

Educational Materials: EM-29 (2001)

Iowa is richly endowed with a variety of rock resources suitable for building construction, and their utility is particularly well displayed in the early architectural heritage of our state. Although building stone is still actively quarried at a few places in Iowa, notably at Stone City in Jones County, quarrying was more widespread during the 1800s and early 1900s, before the advent of cement block and poured concrete construction. Wherever rock resources were conveniently located near growing communities and farms, quarry workers labored to extract blocks of rock for building purposes, especially for foundations. The blocks were “dimensioned” into desired sizes by using hammer and chisel, leaving marks that often are still visible on historic stone buildings across Iowa. Some quarry operations used rock saws and other mechanical devices to make precision block cuts or to create stone lintels, trusses, or decorative pieces. Masons used these stone materials to construct houses, churches, stores, public buildings, and bridge piers, which are lasting monuments to their skills.

Various rock types have been used in Iowa for construction purposes. Limestone and dolomite have been extensively quarried for building stone. Although most sandstones are not very durable, some that are cemented by iron minerals provide a lasting and attractive building stone, as seen in the Amana colonies. Other rock materials are important locally, including field stones derived from glacial deposits. Even quartzite, coal, and geodes have been used. The Geological Survey Bureau has played an important historic role in locating and describing the varieties of stone available for building and other uses in Iowa.



Photo courtesy of State Historical Society of Iowa – Iowa City

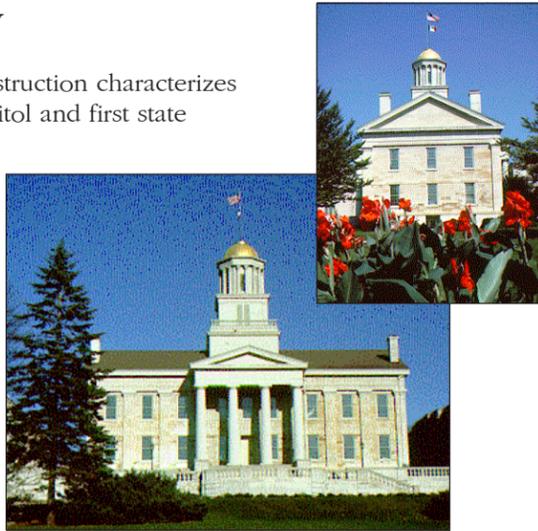
COAL PALACE, OTTUMWA

The Coal Palace, constructed in 1890, was a unique and imaginative example of geologic materials used as building stone in Iowa. Completely veneered with blocks of coal, it was built to honor area miners and to publicize the coal resources of southern Iowa. These coal deposits are the carbonized remains of plants that flourished in tropical coastal lowlands that were present here about 300 million years ago (Pennsylvanian age).

The lavish palace-like building displayed a lofty 200-foot tower, with a dance floor near the top. In contrast to its dark exterior, the interior was bright, with vast rooms decorated with colorful displays made of wheat, oats, corn, sorghum and cattails, including a wall-sized portrait of Chief Wapello. There was a large auditorium for concerts, plays and speeches, and even a 30-foot tall waterfall. A reconstructed coal mine was featured beneath the structure. The Coal Palace was dismantled following the 1891 exposition season.

OLD CAPITOL, IOWA CITY

Stately limestone block construction characterizes Iowa's former territorial capitol and first state capitol, whose cornerstone dates to 1840. The imposing blocks of Devonian-age limestone were hand-quarried at Iowa City and along present-day Coralville Lake in Johnson County. Occurrences of natural building stone in the area were important in deciding the site of Iowa's capital city.



Photographic Services, The University of Iowa

SIOUX CITY PUBLIC MUSEUM

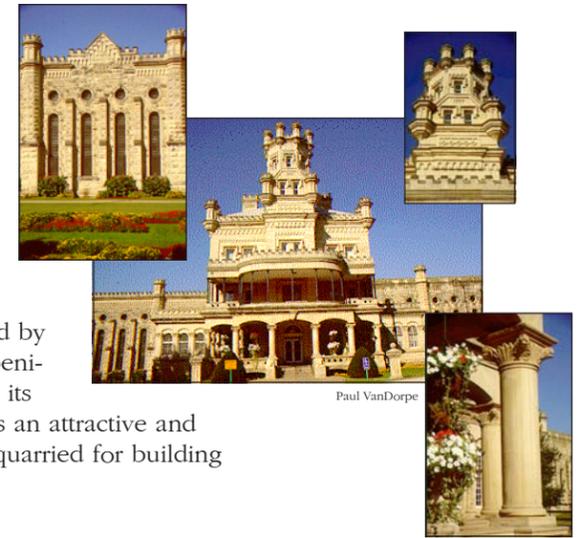
The Sioux City Museum is housed in the Romanesque-style Pierce mansion built in the early 1890s. It is made of durable purplish Sioux Quartzite (Precambrian age), the oldest bedrock exposed in Iowa. Quartzite quarries are located near Sioux Falls and nearby areas of Minnesota and northwestern Iowa. Many outstanding buildings are constructed from this enduring stone in the tri-state region and elsewhere.



Photo courtesy of Sioux City Public Museum

IOWA MEN'S REFORMATORY, ANAMOSA

The Men's Reformatory, constructed in several stages between 1872 and 1936, is one of the most imposing stone buildings in Iowa. It is composed of dimensioned blocks of "Anamosa stone" quarried by convict labor at the neighboring "penitentiary quarries." This stone, with its distinctive laminated appearance, is an attractive and durable Silurian-age dolomite still quarried for building stone at nearby Stone City.



Paul VanDorpe

FORT ATKINSON STATE PRESERVE

Fort Atkinson was constructed between 1840 and 1842 as a frontier military post in northeast Iowa to enforce a treaty protecting the area's Winnebagos from other Indians. Limestone slabs derived from the fort's quarry were used for the barracks' foundations and other buildings. The main buildings were limestone-walled constructions. Restored buildings as well as stone ruins are seen today within this state preserve.



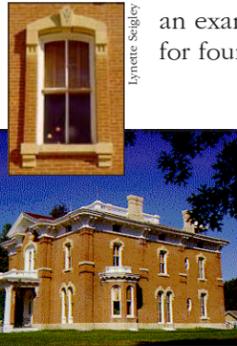
Ken Formanek

HISTORIC MONTAUK, CLERMONT

This beautiful Italianate mansion of brick and limestone was built in 1874 for William Larrabee, Iowa's 12th governor. Montauk is an example of building stone used for foundations, lintels, and cornices in otherwise brick construction. Many buildings from the 1800s and early 1900s possess stone foundations. Later constructions are characterized by foundations of cement block or concrete.



Ken Formanek



Lynette Seigley



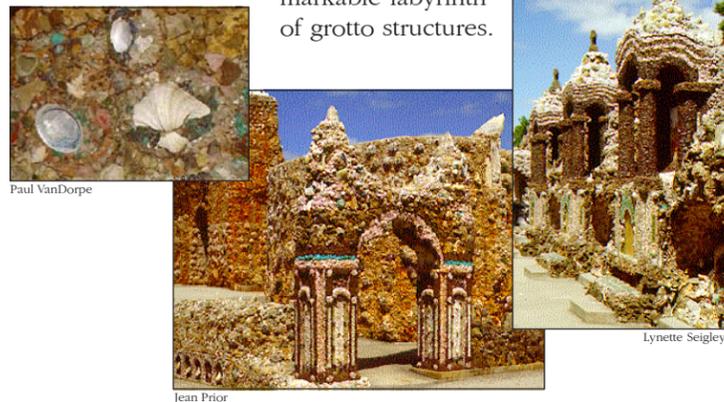
Paul VanDorpe

SANDSTONE HOUSE, AMANA

This sandstone house, built in 1857, is characteristic of the simple and pleasing architectural style found throughout the Amana colonies. Residential and community buildings in several of the Amana villages are built from this distinctive locally quarried reddish-brown sandstone of Pennsylvanian age. Amana's sandstone buildings date from the 1850s through 1870s.

GROTTO OF THE REDEMPTION, WEST BEND

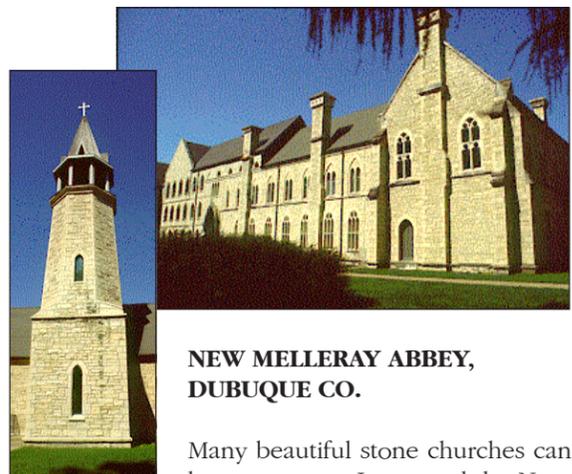
The famous West Bend Grotto incorporates an incredible variety of rock types elaborately encrusted over a concrete framework. Striking rocks, minerals, crystals, ores, semiprecious stones, shells, and fossils came from many localities around the United States and elsewhere. Construction was initiated in 1912 under the direction of Father Paul Dobberstein, whose vision and lifelong dedication resulted in this remarkable labyrinth of grotto structures.



Paul VanDorpe

Lynette Seigley

Jean Prior



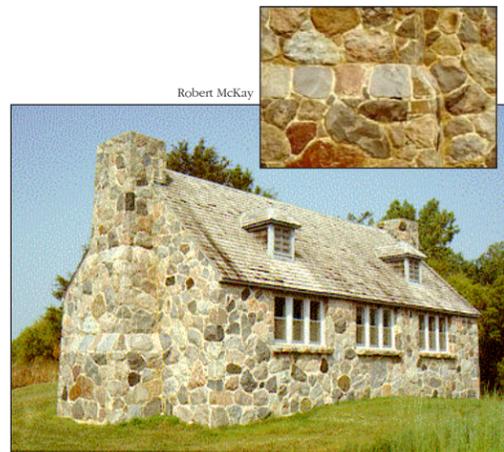
Steve Hill

NEW MELLERAY ABBEY, DUBUQUE CO.

Many beautiful stone churches can be seen across Iowa, and the New Melleray Abbey near Dubuque is an example of the rich heritage of religious construction found in our state. This Trappist monastery was constructed by monks beginning in 1868 and continuing into the 1950s. It is composed principally of Silurian-age dolomite blocks from the monastery's quarry, with edge-blocks and windows of "Anamosa stone." Some intermediate construction is of Indiana limestone.

IOWA LAKESIDE LABORATORY, WEST OKOBOJI LAKE

Glacial deposits across Iowa contain abundant boulders and cobbles of igneous and metamorphic origin transported via glaciers from Minnesota.



Robert McKay

These easily accessible field stones have been utilized especially for house and barn foundations. The fine example of boulder construction shown here is found at Iowa Lakeside Laboratory, a state university field station for natural history classes and research.

STATE CAPITOL, DES MOINES

The state capitol building in Des Moines, constructed from 1872-1884 is a spectacular example of late 19th-century stone construction. The granite base was secured from Buchanan County boulders and quarries in Minnesota. Limestone blocks comprising the foundation and lower levels were quarried in Johnson and Madison counties. Most of the exterior was constructed of sandstone blocks from quarries in Missouri. Additional stone, both local and imported, was used in the interior, including a number of decorative marbles.

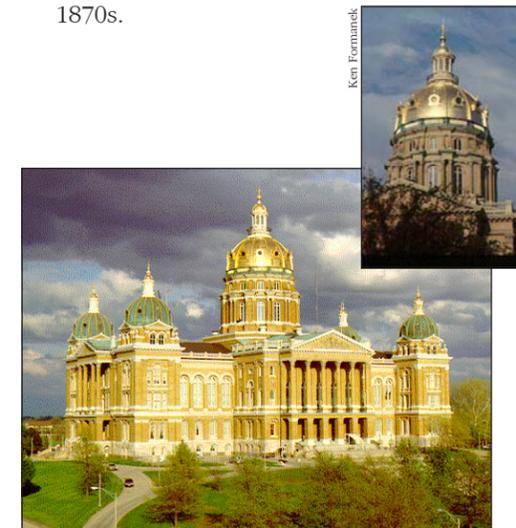


Photo courtesy of State Historical Society of Iowa - Iowa City

Ken Formanek