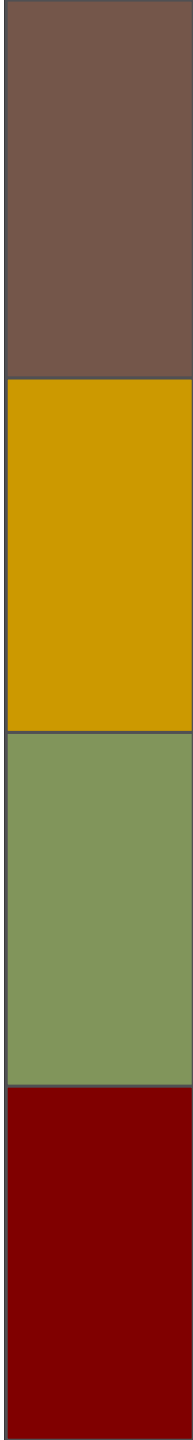
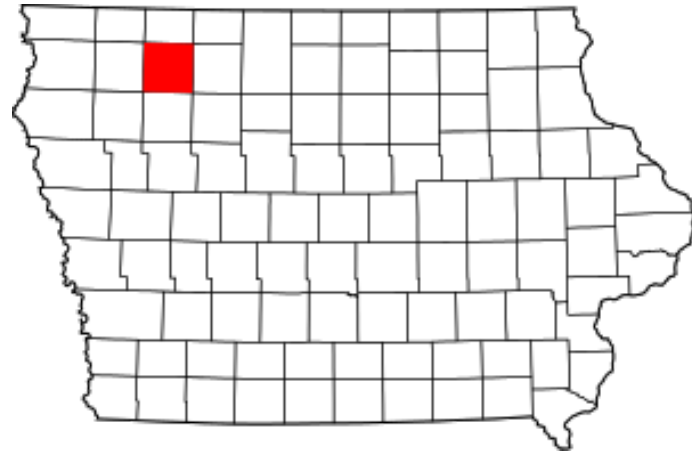


Iowa's History in Clay

Chad Heinzl, Ph.D.

Clay



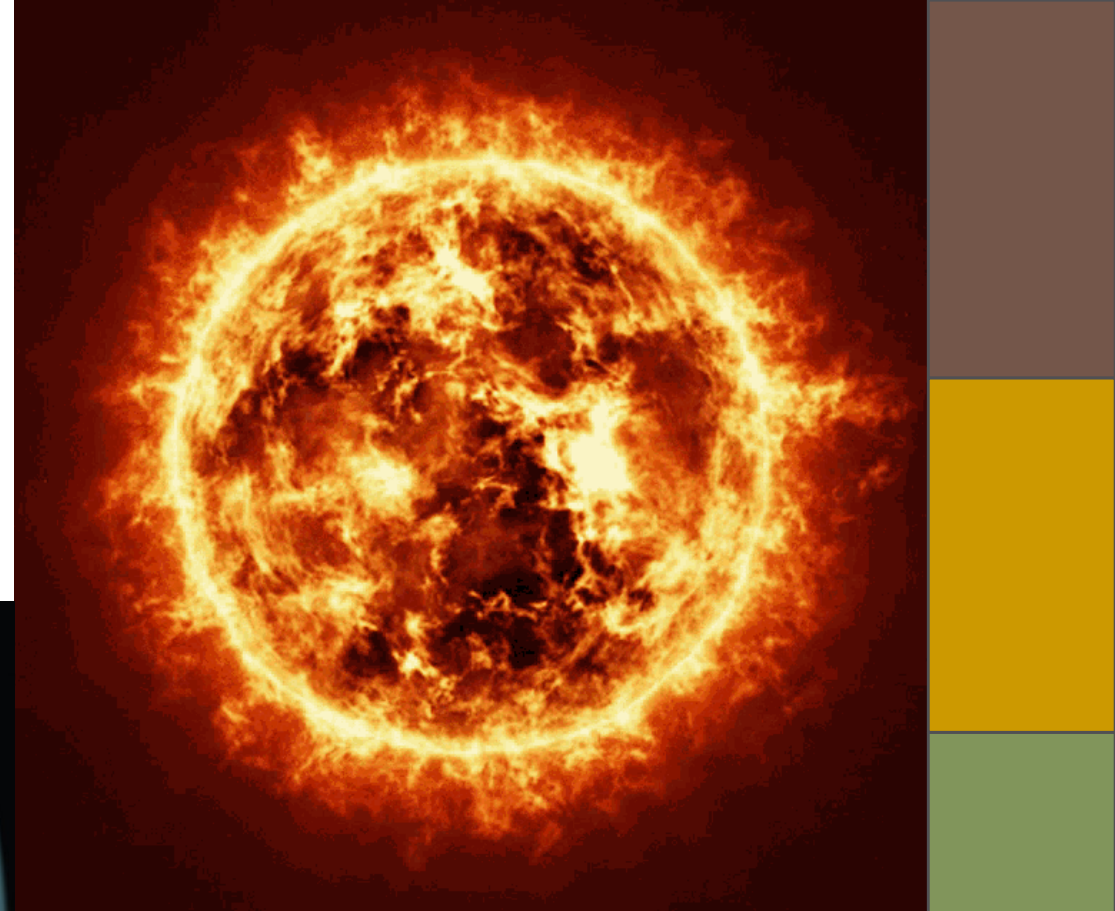
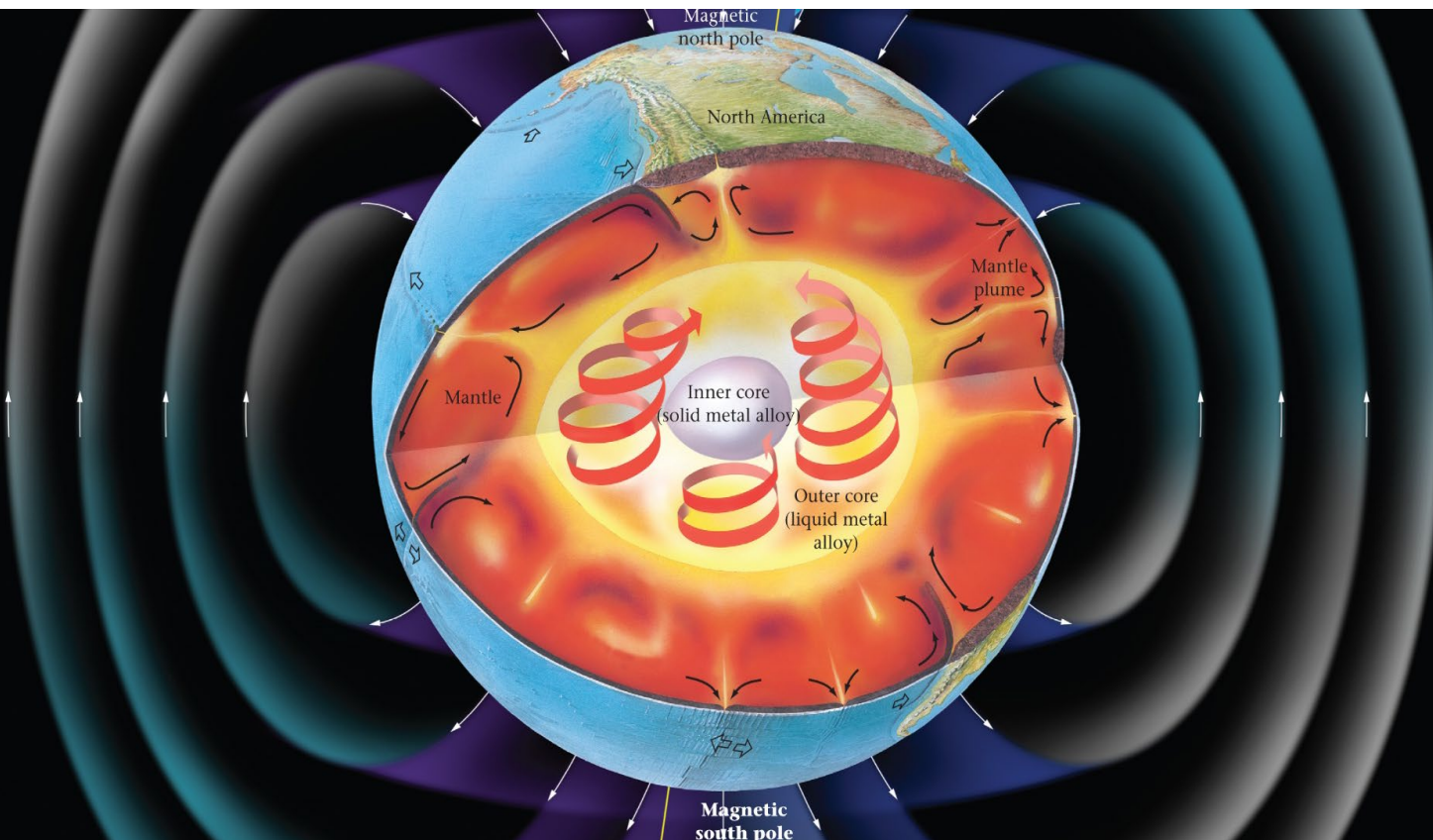
Weathering leads to Sediments

Plate Tectonics

Volcanoes

Mountain building

Ocean creation and reduction



Weather to Climate

Hydrologic Cycle

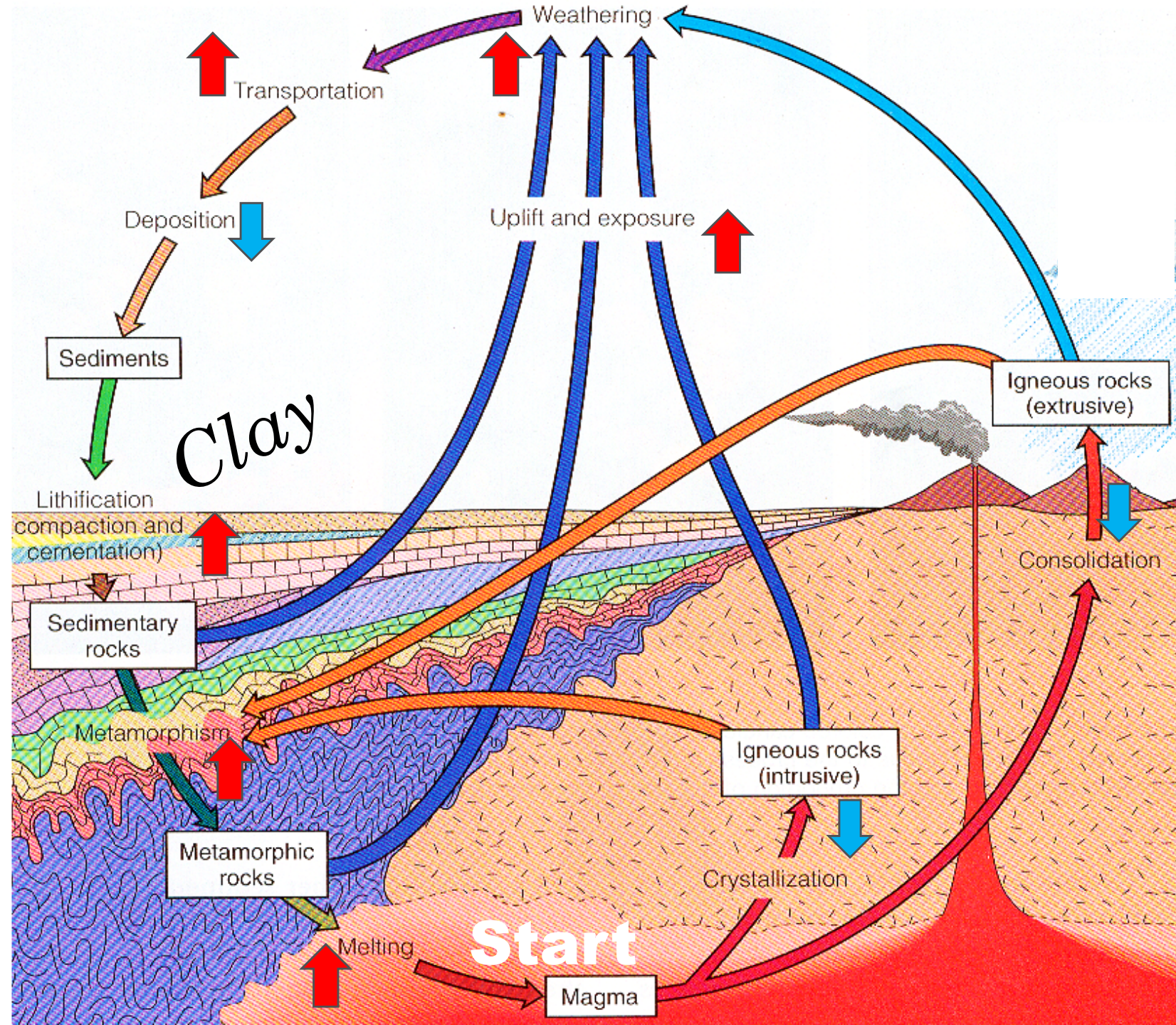
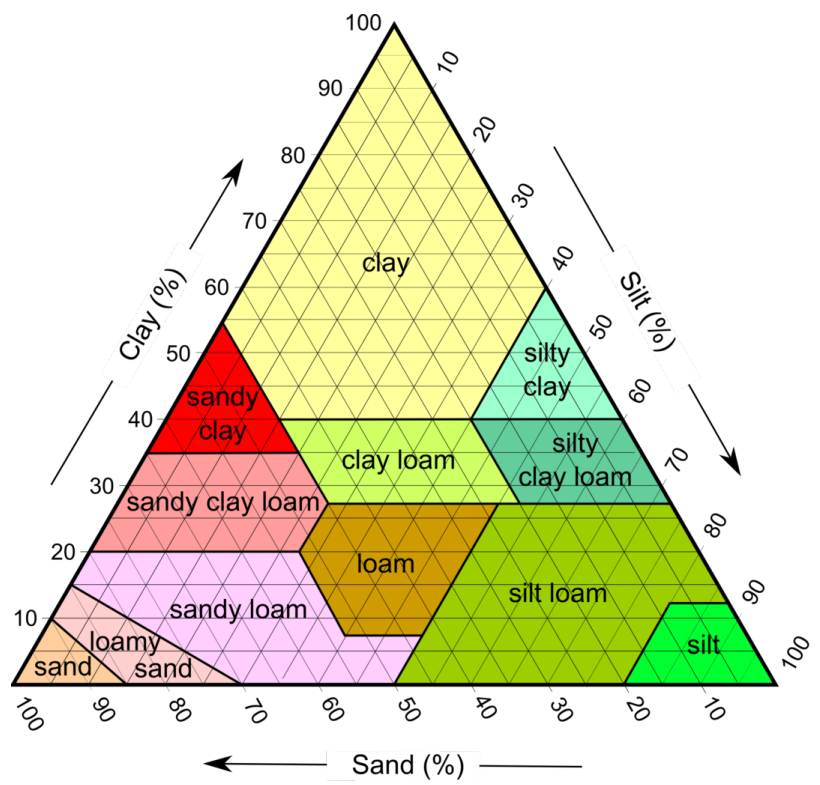
- Rivers – Ocean currents – Rain

Ecosystem Cycles

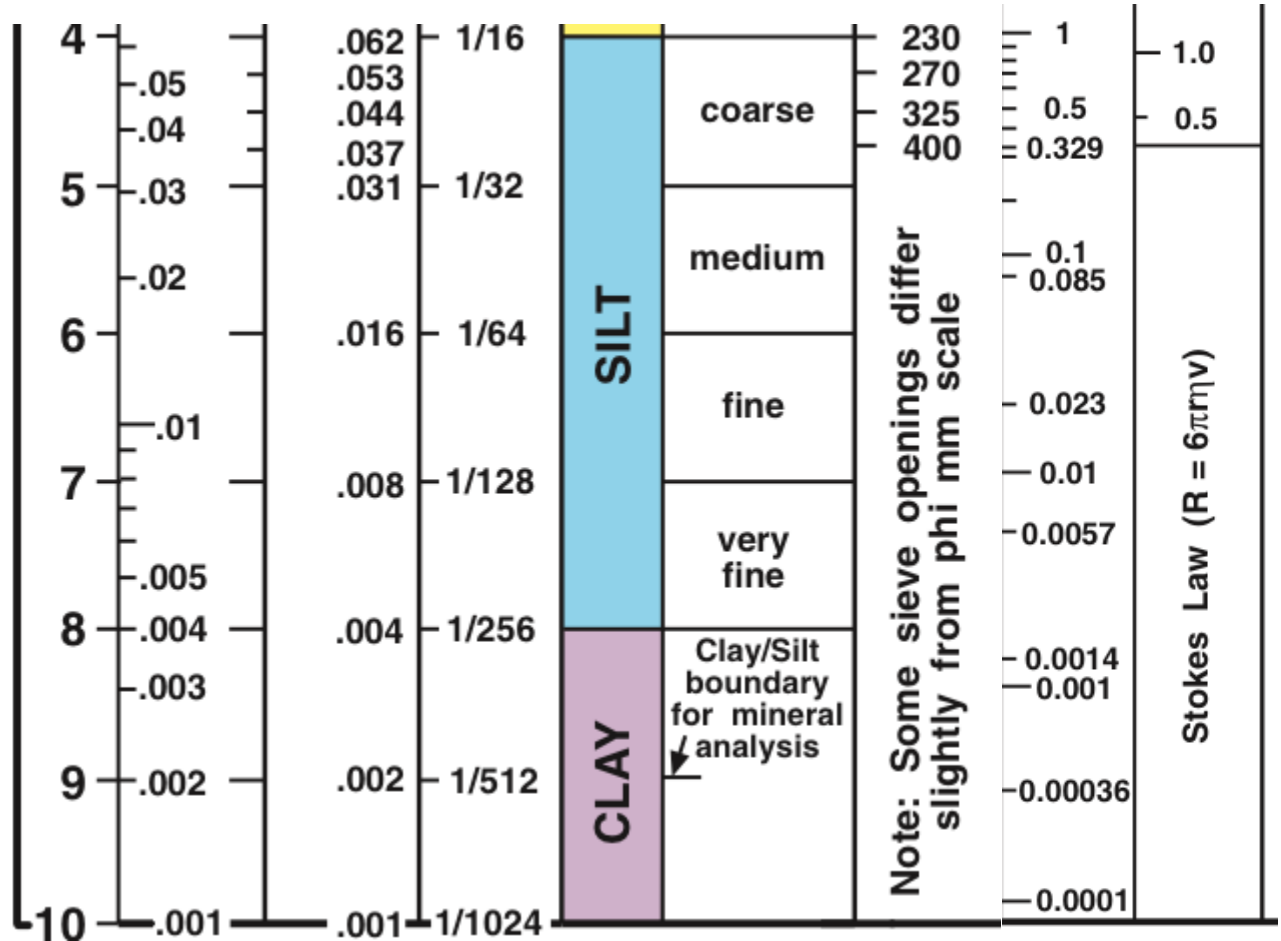
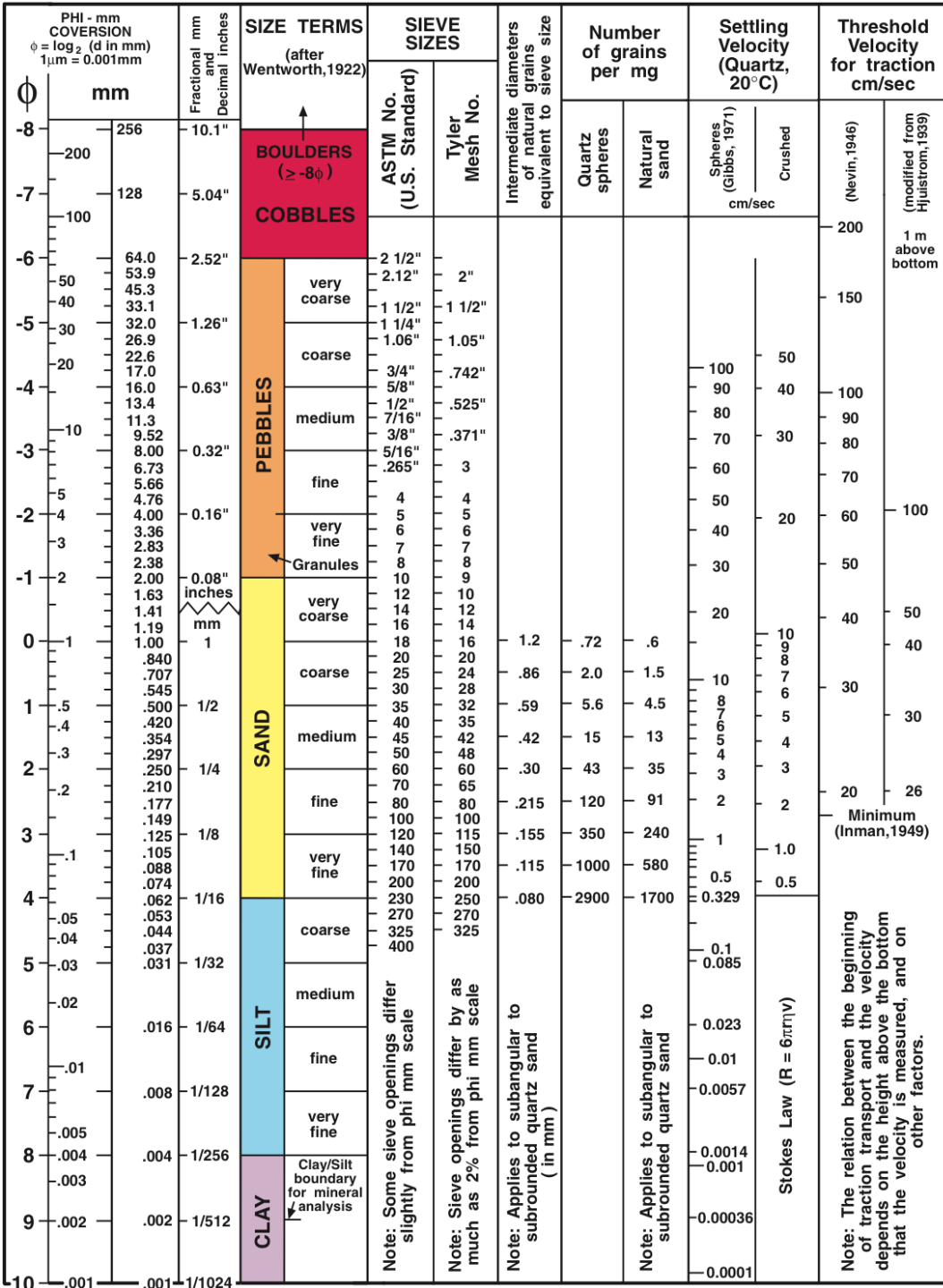
- Soils – Plants – Animals

Rock Cycle

Energy Change Exchange

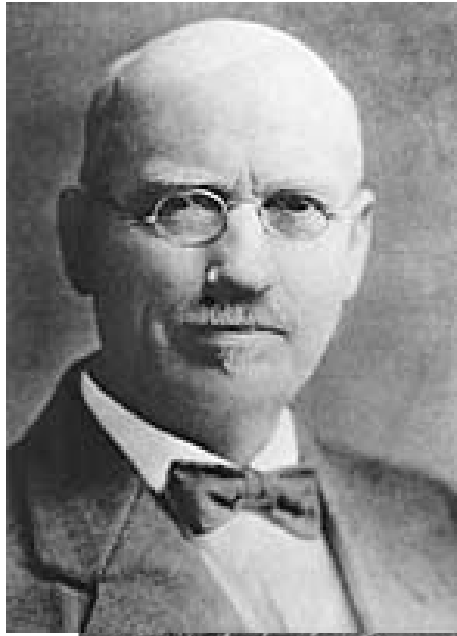


Udden – Wentworth Scale



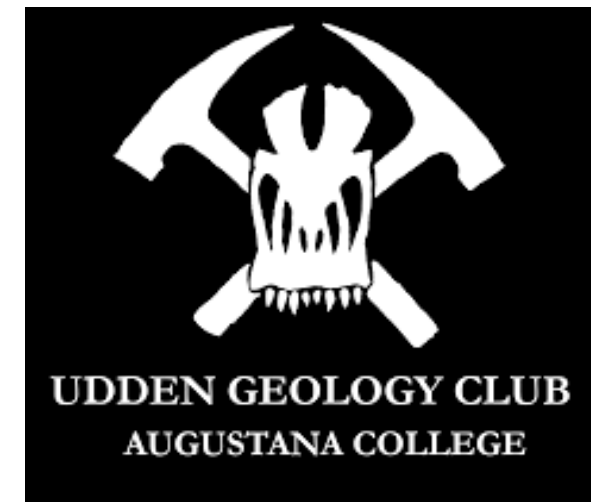
Johan August Udden (1859-1932)

Augustana
COLLEGE

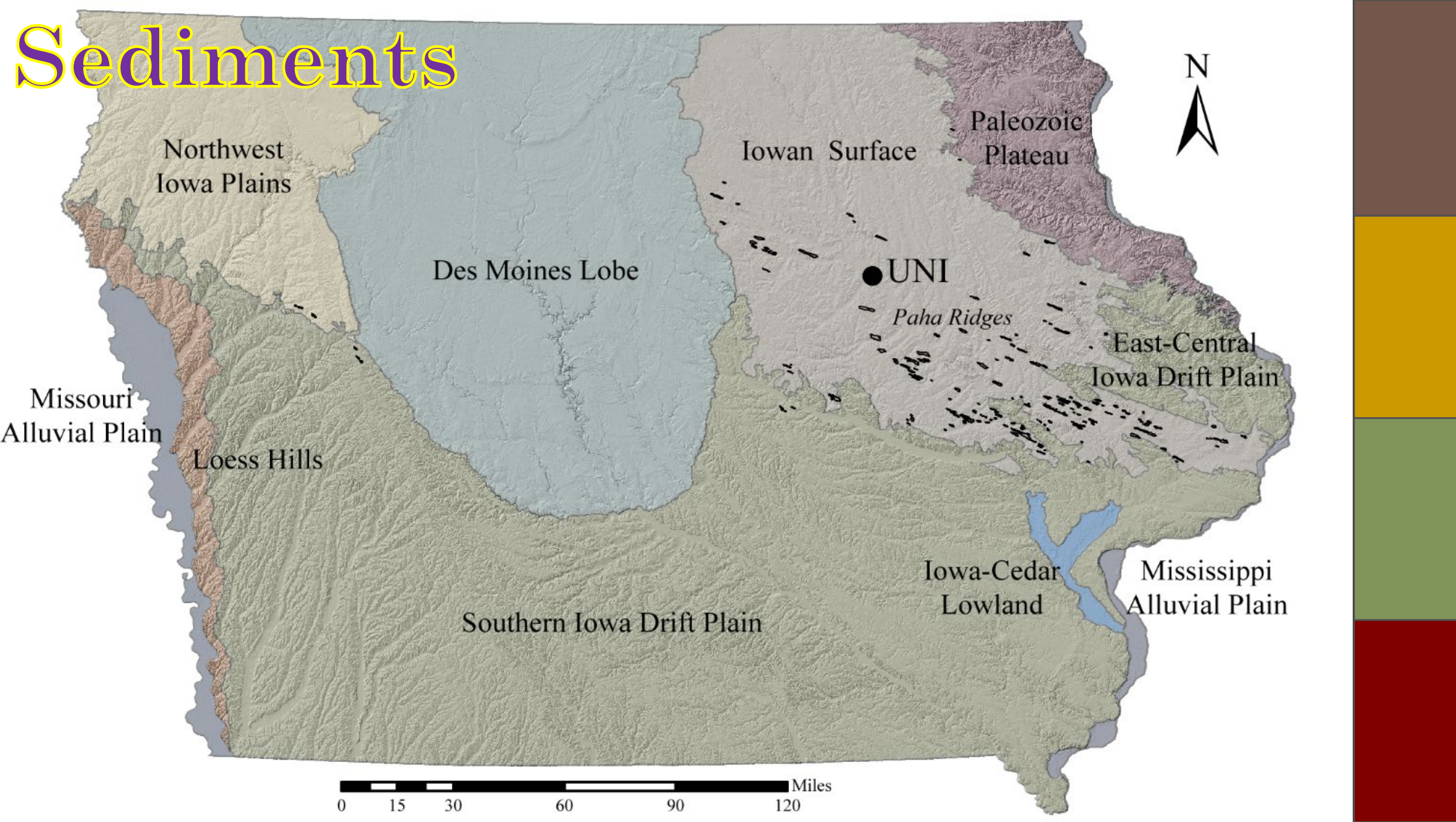


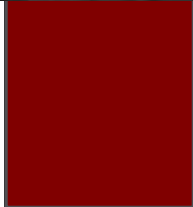
Grain-size Scale

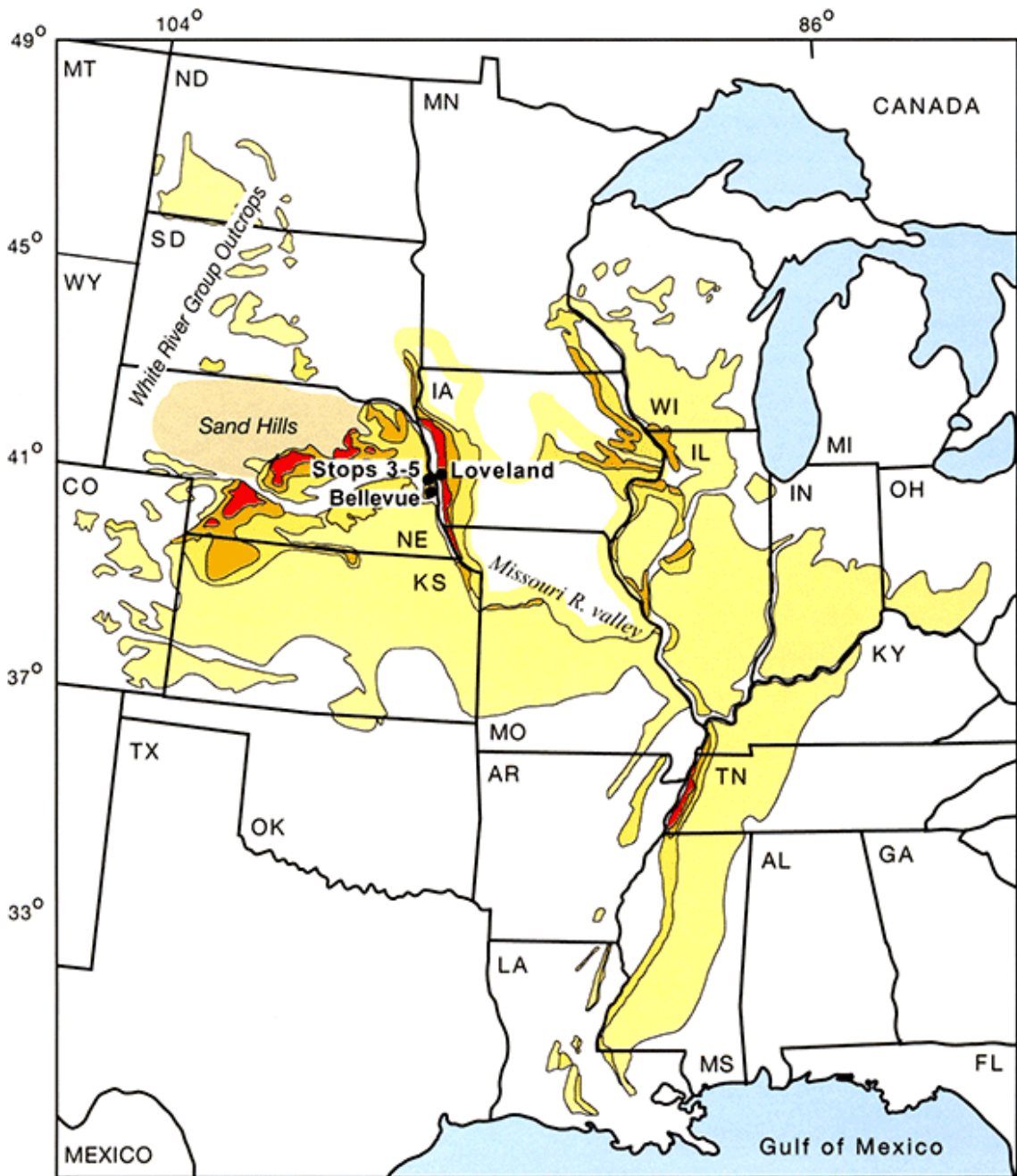
Wind blown
sediment / loess

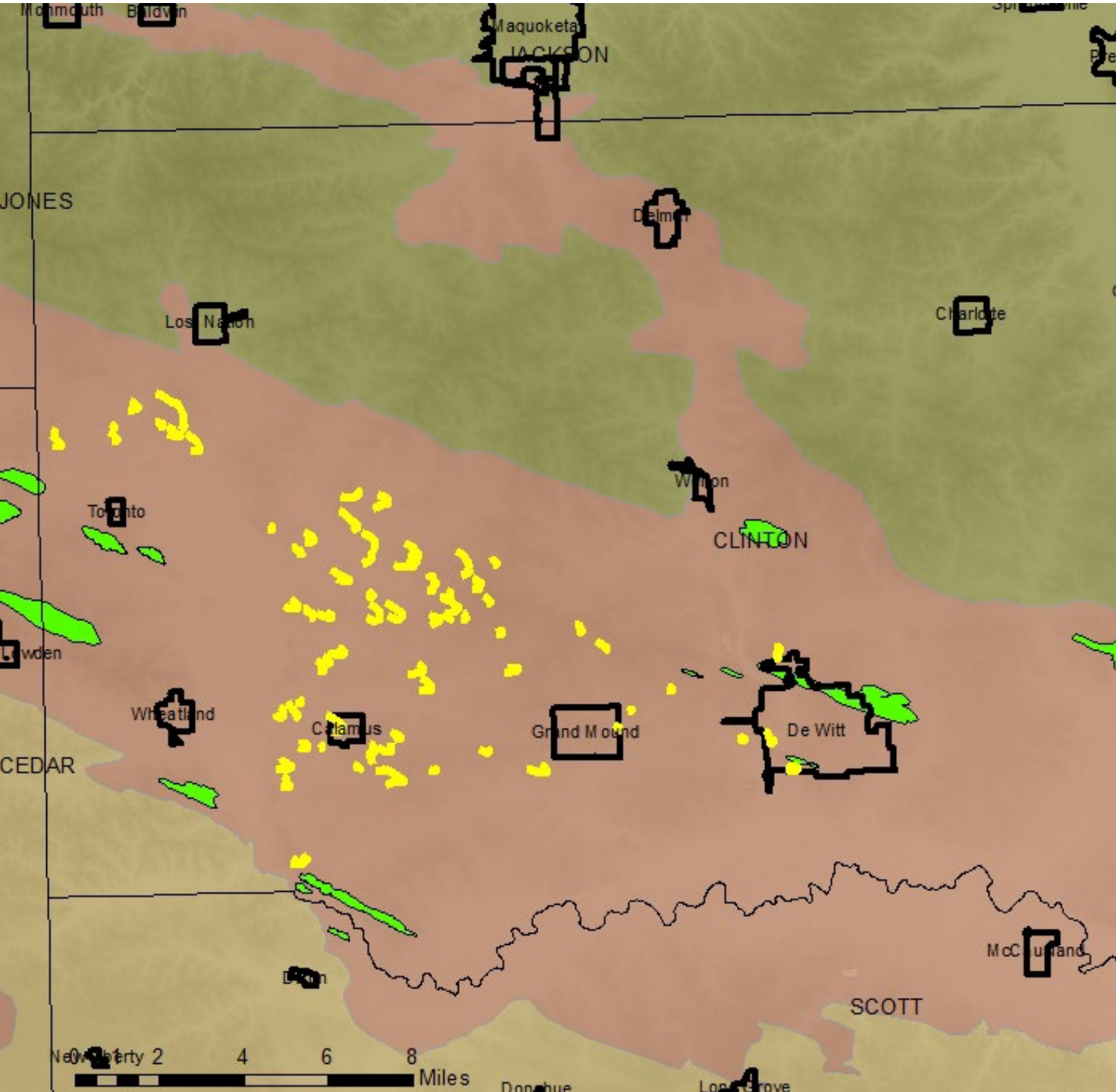


Sediments



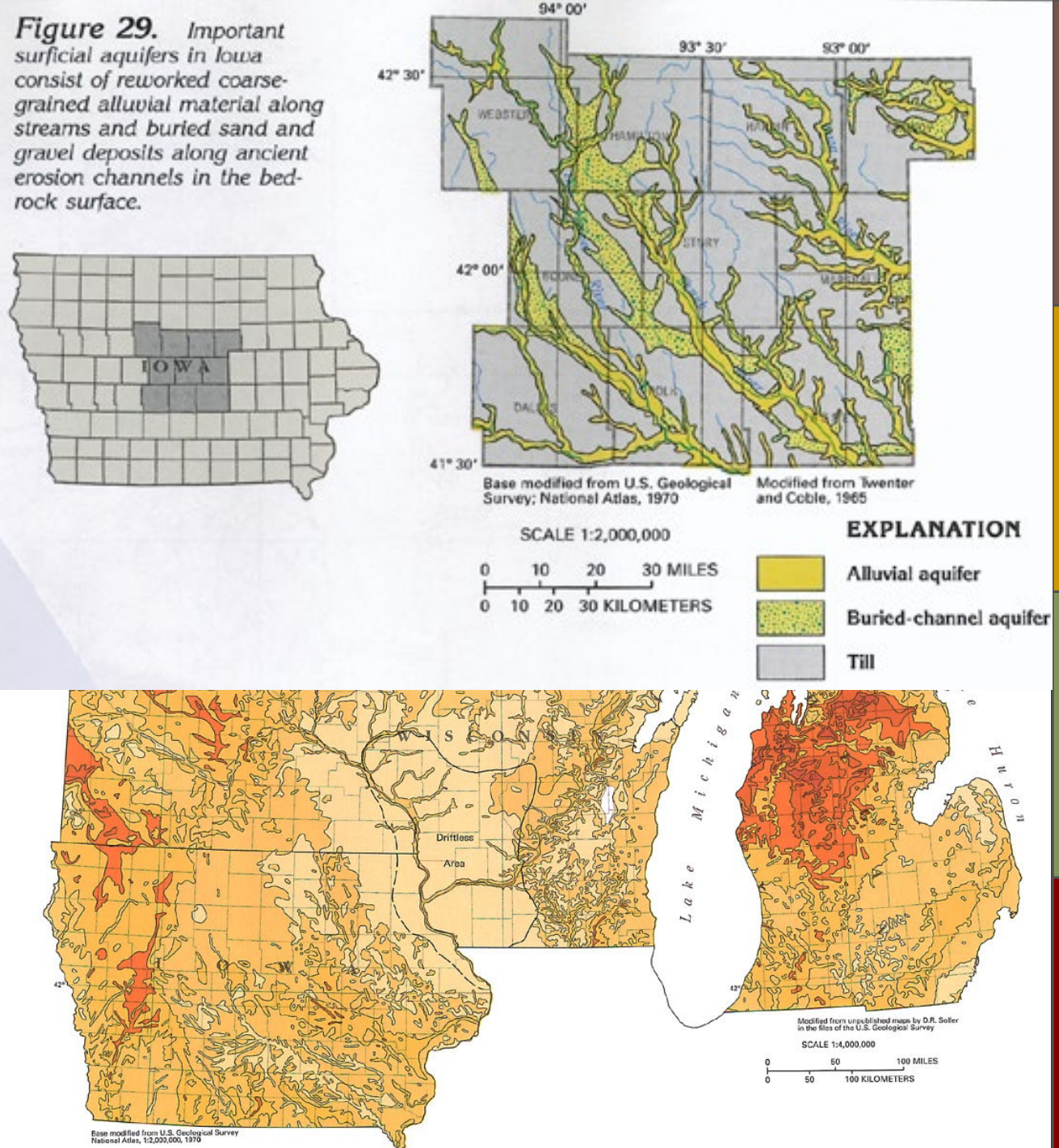






Surficial clay

- Surface clay – Glaciers, Rivers, Wind
- Surficial materials = Easy to obtain and profitable early on
- 1920-40s Surface Plants
 - Kimballton/Audobon Co.
 - Garrison/Benton Co.
 - Gladbrook/Tama Co.
 - Winfield/Henry Co.



BEDROCK GEOLOGIC MAP OF IOWA

1:500,000

Iowa Geological and Water Survey
Open File Map OFM-2010-01
March 2010

Primary Geologists By
Brian J. Wicks, Raymond R. Anderson and John P. Pope
Iowa Geological and Water Survey, Iowa City, Iowa

Iowa Geological and Water Survey
Edward D. Lahn, State Geologist
Iowa Department of Natural Resources
Edward L. Leopold, Director

ACKNOWLEDGEMENTS

Recognized for significant contributions to the map's production: Bill J. Bralier, James D. Chalkley, Steve A. Lamberson, Robert M. McKay, Douglas P. Lee and Thomas E. Marshall.
Supported in part with funding from the U.S. Geological Survey - National Cooperative Geologic Mapping Program.

SOUTH DAKOTA

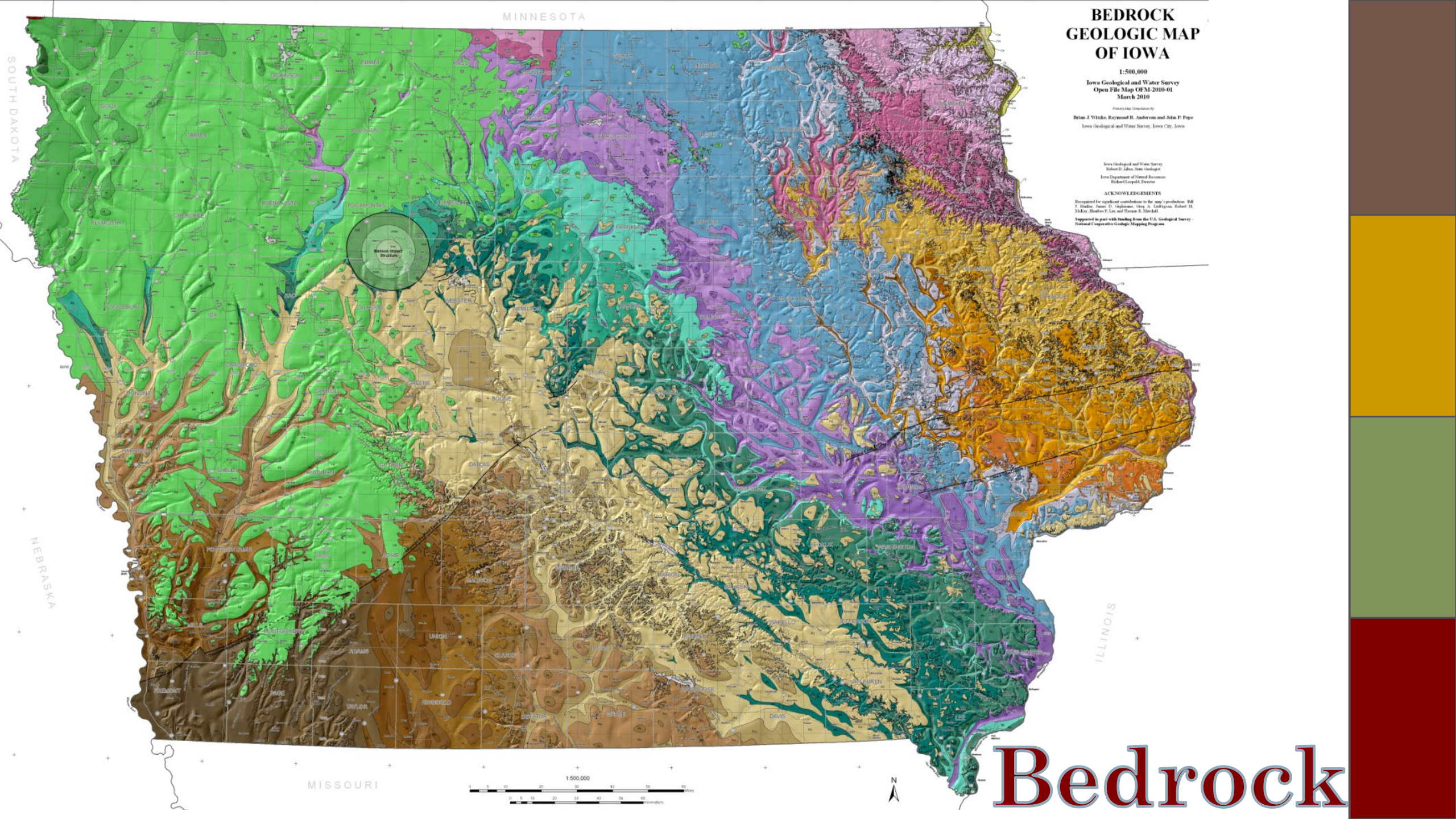
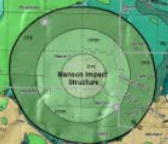
NEBRASKA

ILLINOIS

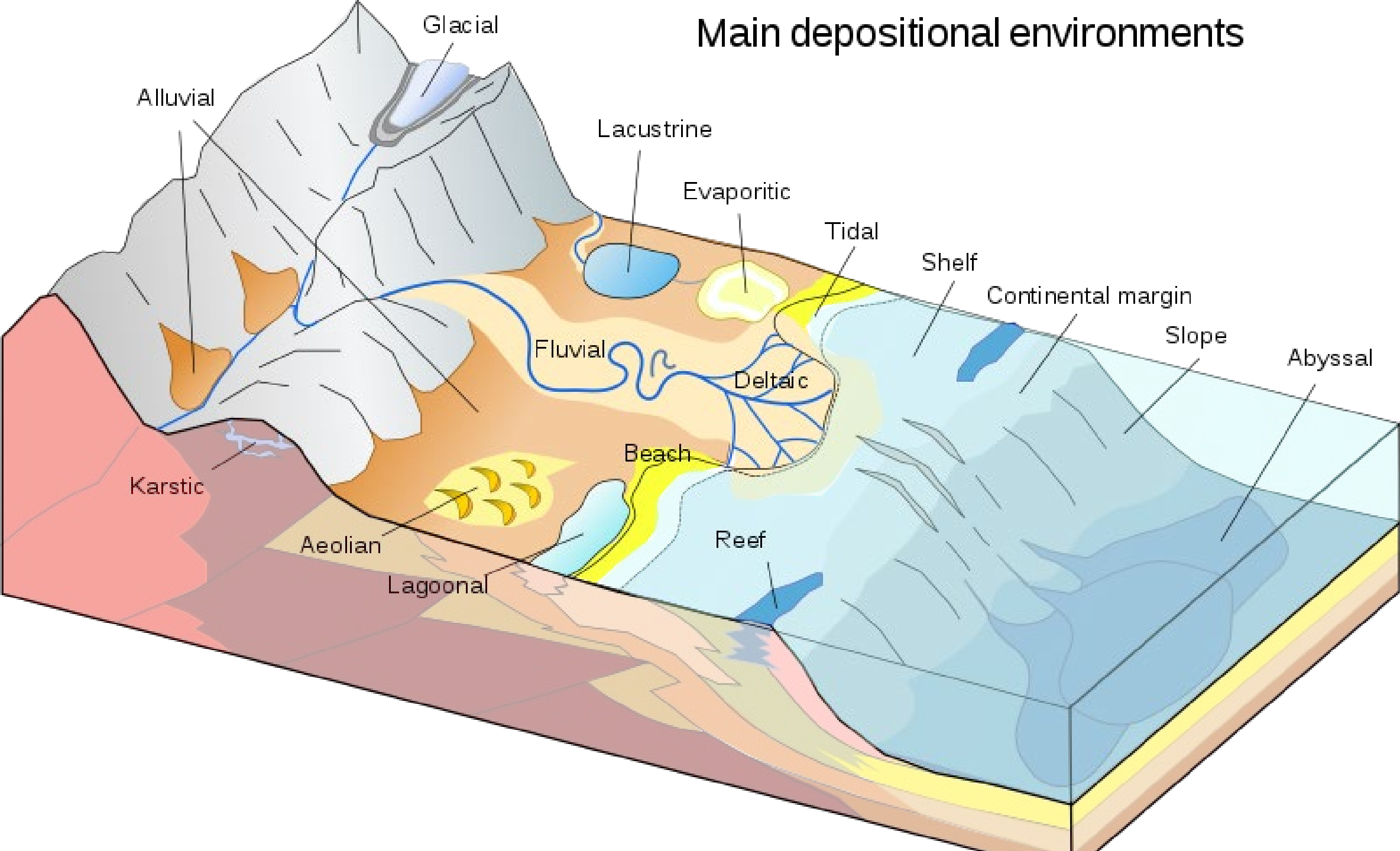
MISSOURI



Bedrock



Main depositional environments



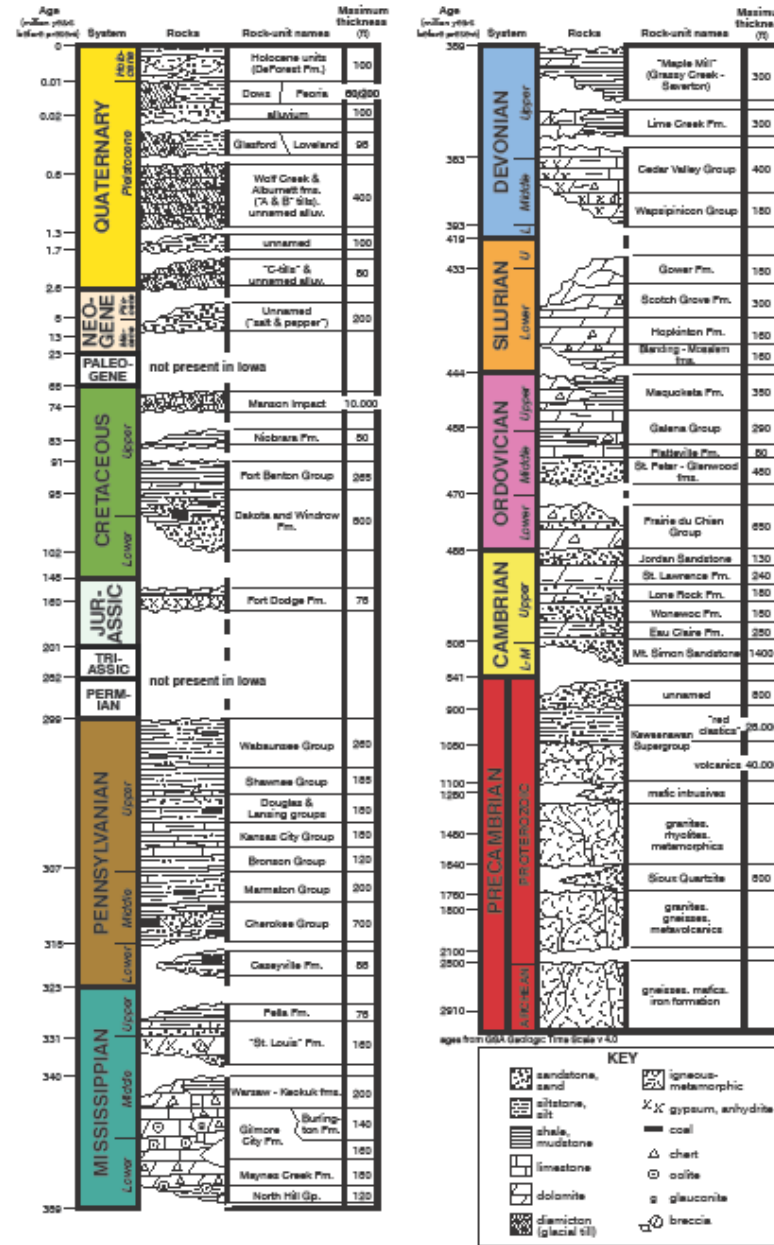
Shale

Cretaceous
Dakota Formation
- Woodbury Member

Pennsylvanian
Cherokee Group

STRATIGRAPHIC COLUMN OF IOWA

2017



Devonian
Lime Creek Formation
- Juniper Hill Member

Ordovician
Maquoketa Formation

BEDROCK GEOLOGIC MAP OF IOWA

1:500,000

Iowa Geological and Water Survey
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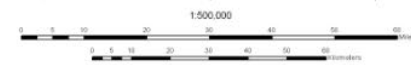
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SOUTH DAKOTA

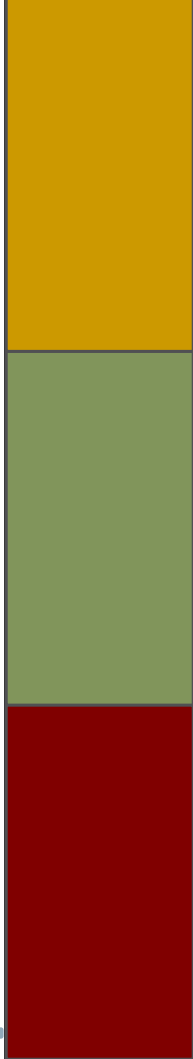
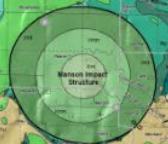
NEBRASKA

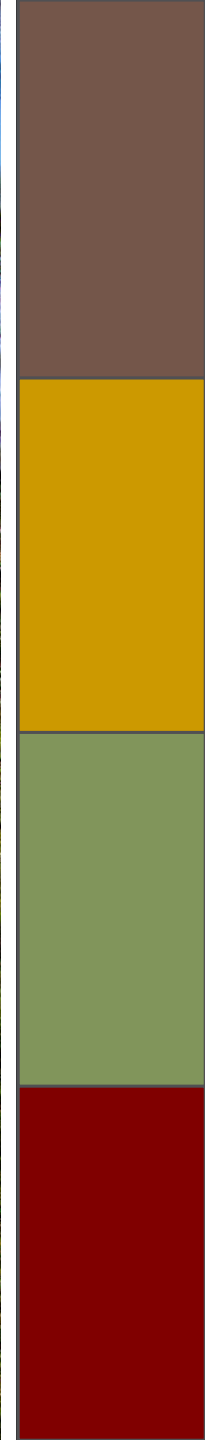
ILLINOIS

MISSOURI



Bedrock



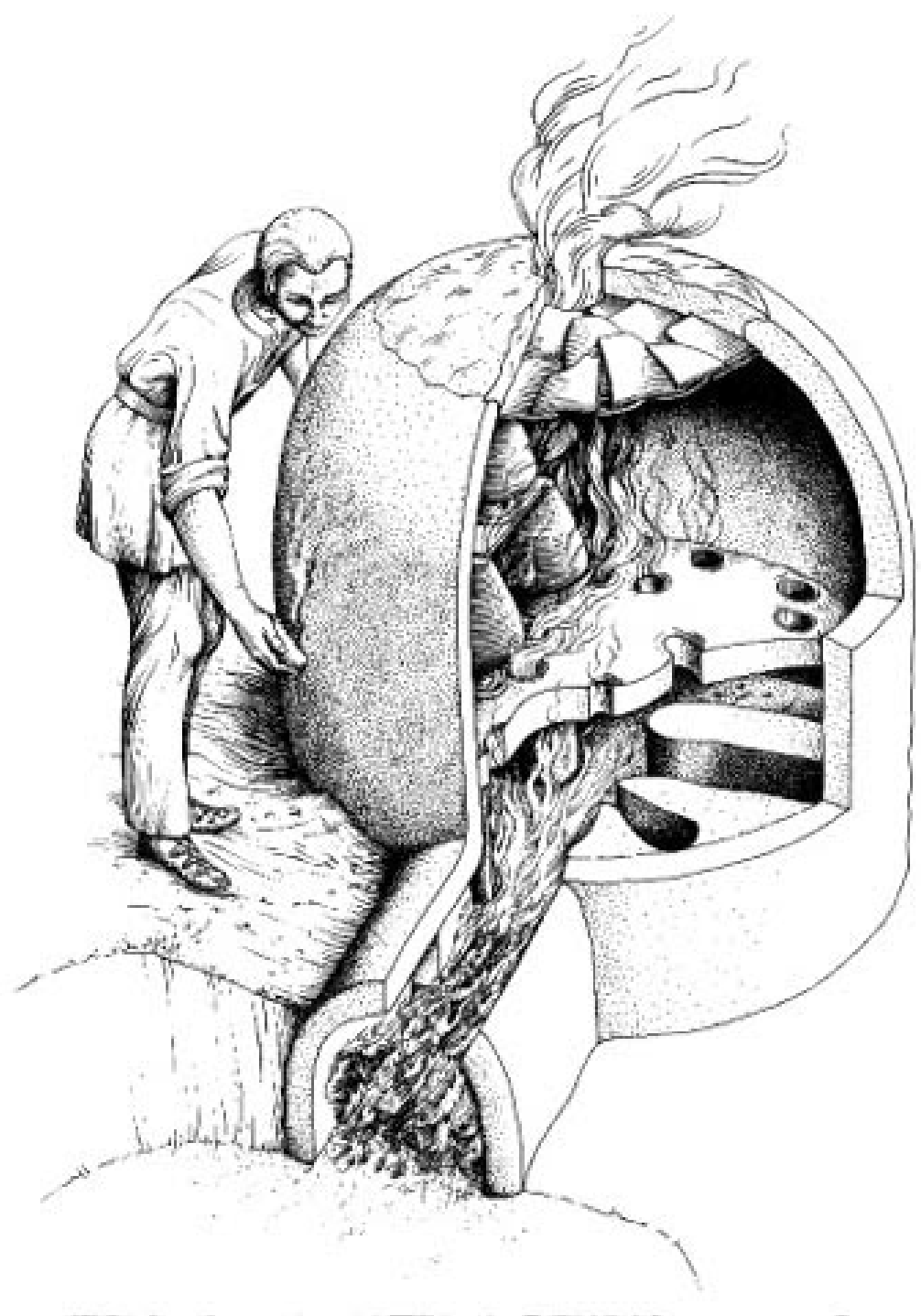


Meskwaki Nation



WA-PEL-LA
A MUSQUAKEE CHIEF.







Iowa's Archaeological Timeline



Created by Office of the State Archaeologist, the University of Iowa
Modified from original version, 2015

Explorers, Pioneers and Steamboats

Rivers facilitated

Migration

Trade

Pelts

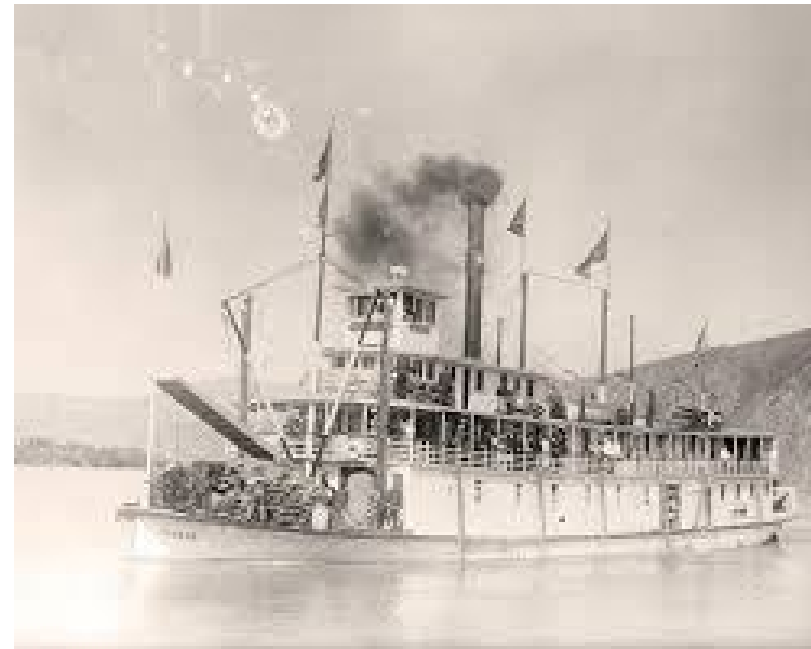
Grain

Wood

Ore

Gambling

Military



1823

Virginia

1860

1819



Chippewa

[Missouri pdf](#)

Old Times on the
Upper Mississippi
The Recollections of a Steamboat Pilot 1908 from 1854 to 1863
George Byron Merrick (1908)

<https://www.gutenberg.org/files/47262/47262-h/47262-h.htm>

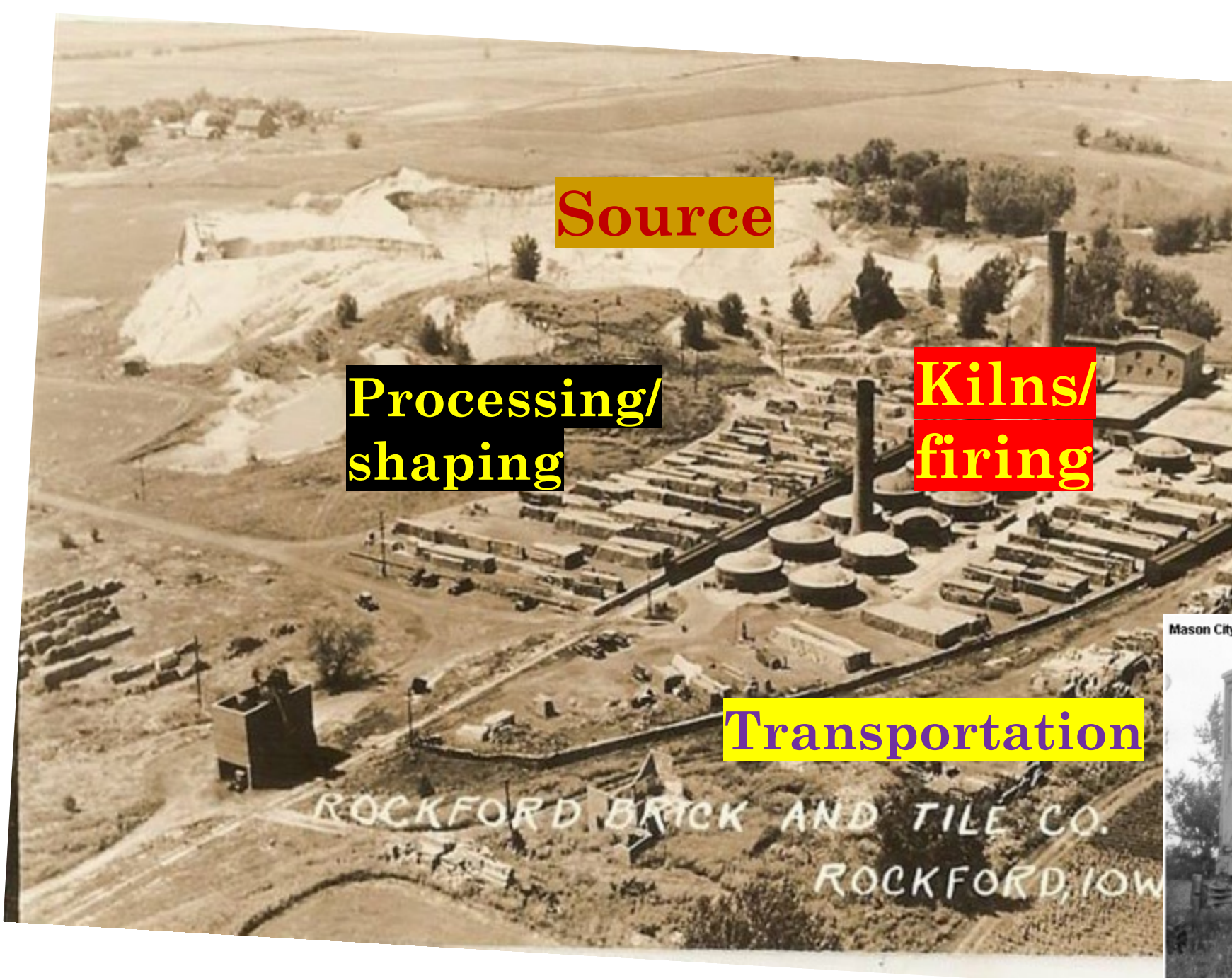
Continued Immigration into and through 1900

- Steamboat 'Bills of Lading' Post 1850 show increased arrivals of..
 - Rakes, hoes, spades, grindstones
 - Farm machinery
- Major populations of
 - Dutch to Pella
 - Tappist monks to New Melleray/Ireland
 - Luxemburgers to St. Donatus
 - Swiss to New Glarus
 - Germans to Davenport, Guttenburg, Reinbeck and New Berlin/Lincoln...
 - Mecklenburgers, set up a socialist community in Elkader
 - Czech and Slovak to Cedar Rapids



Iowa – Clay Industry

- In 1900 there were 381 clay companies operating in 89 of Iowa's counties!
- Sources
 - Bedrock – Shale
 - Sediment – River
 - Glacial sediment – Lake to Till
- Produced brick and tile
- Today only two companies mine clay for bricks in Dallas and Woodbury Counties



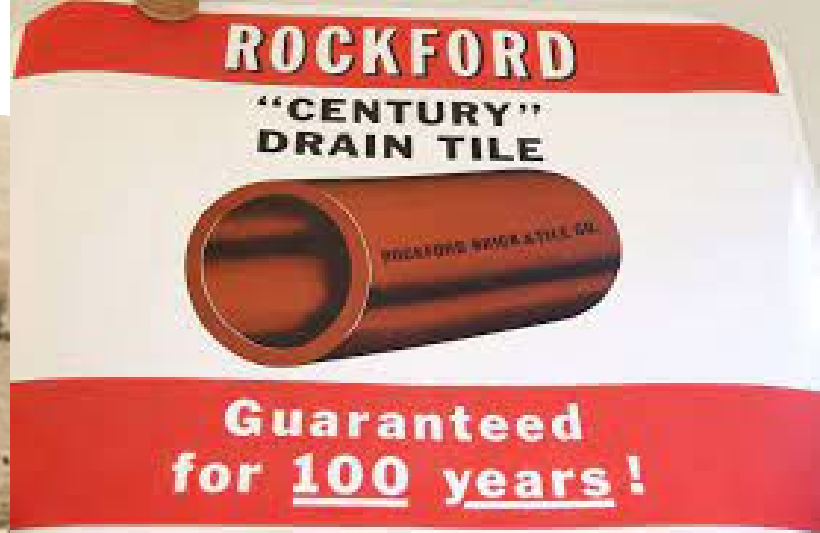
Source

Processing/
shaping

Kilns/
firing

Transportation

ROCKFORD BRICK AND TILE CO.
ROCKFORD, IOWA



ROCKFORD

"CENTURY"
DRAIN TILE



Guaranteed
for 100 years!

Mason City Brick & Tile Co at Mason City, IA, Aug 1952

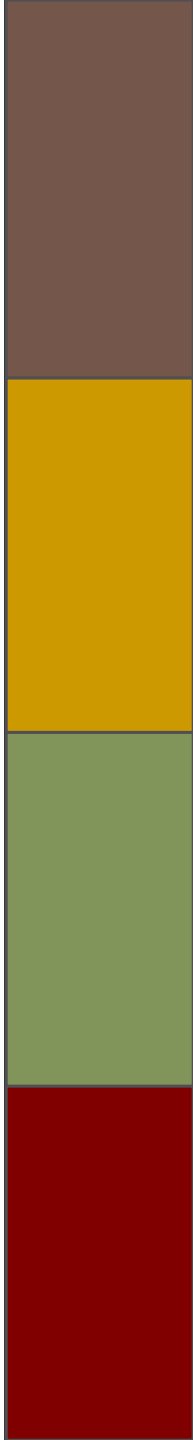


Don Ross Col





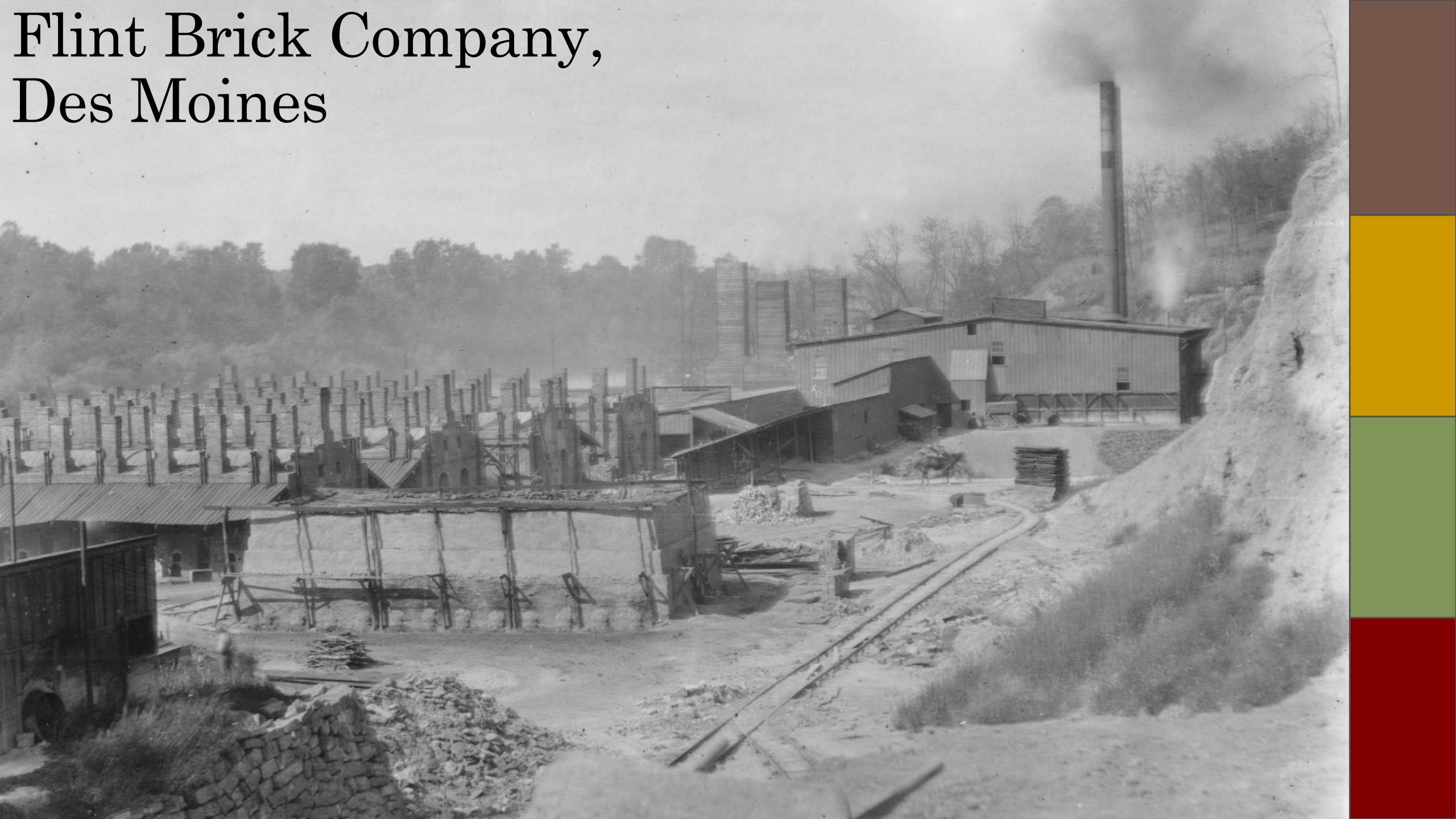
*ROCKFORD BRICK AND TILE CO.
ROCKFORD, IOWA*

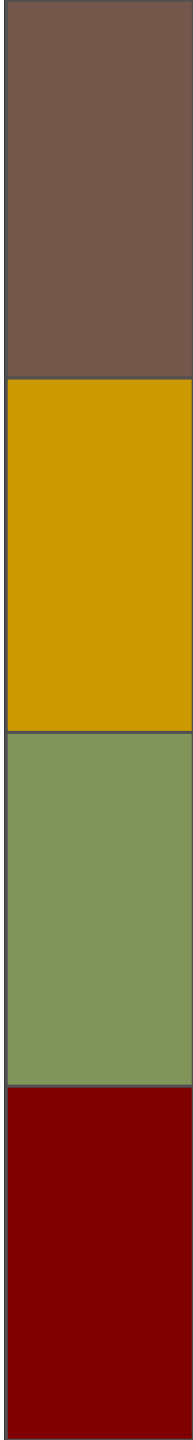
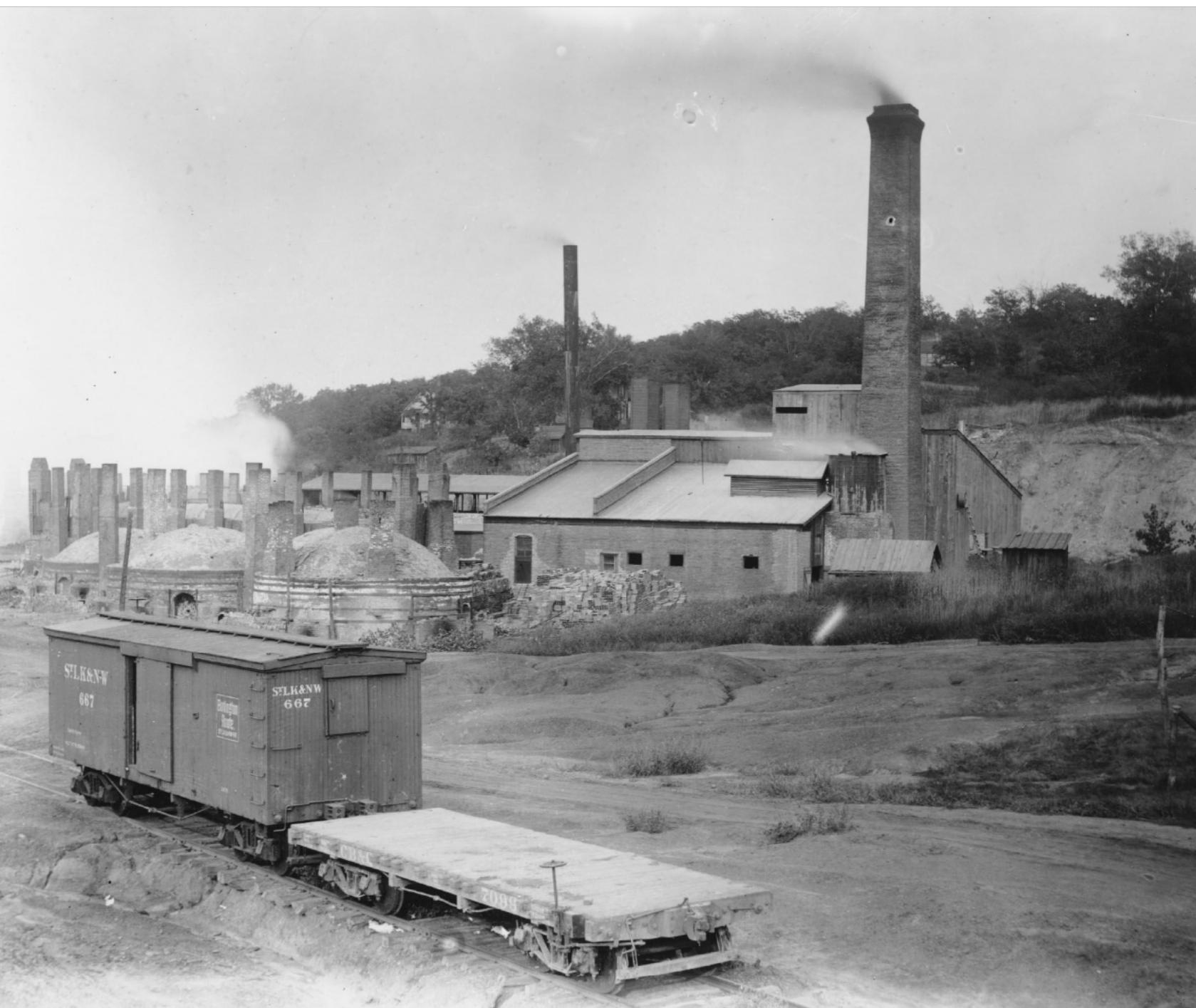


Rockford Fossil and Prairie Preserve



Flint Brick Company, Des Moines

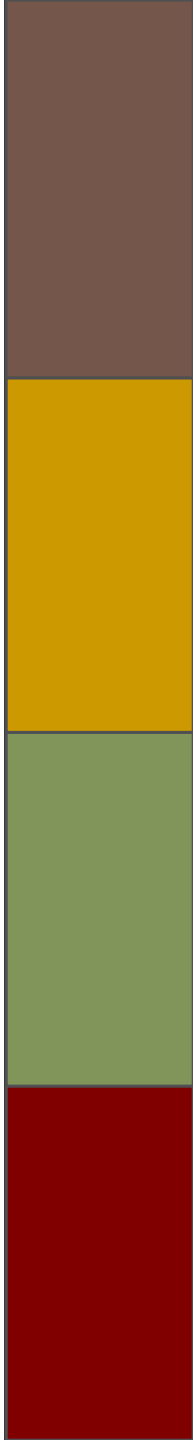
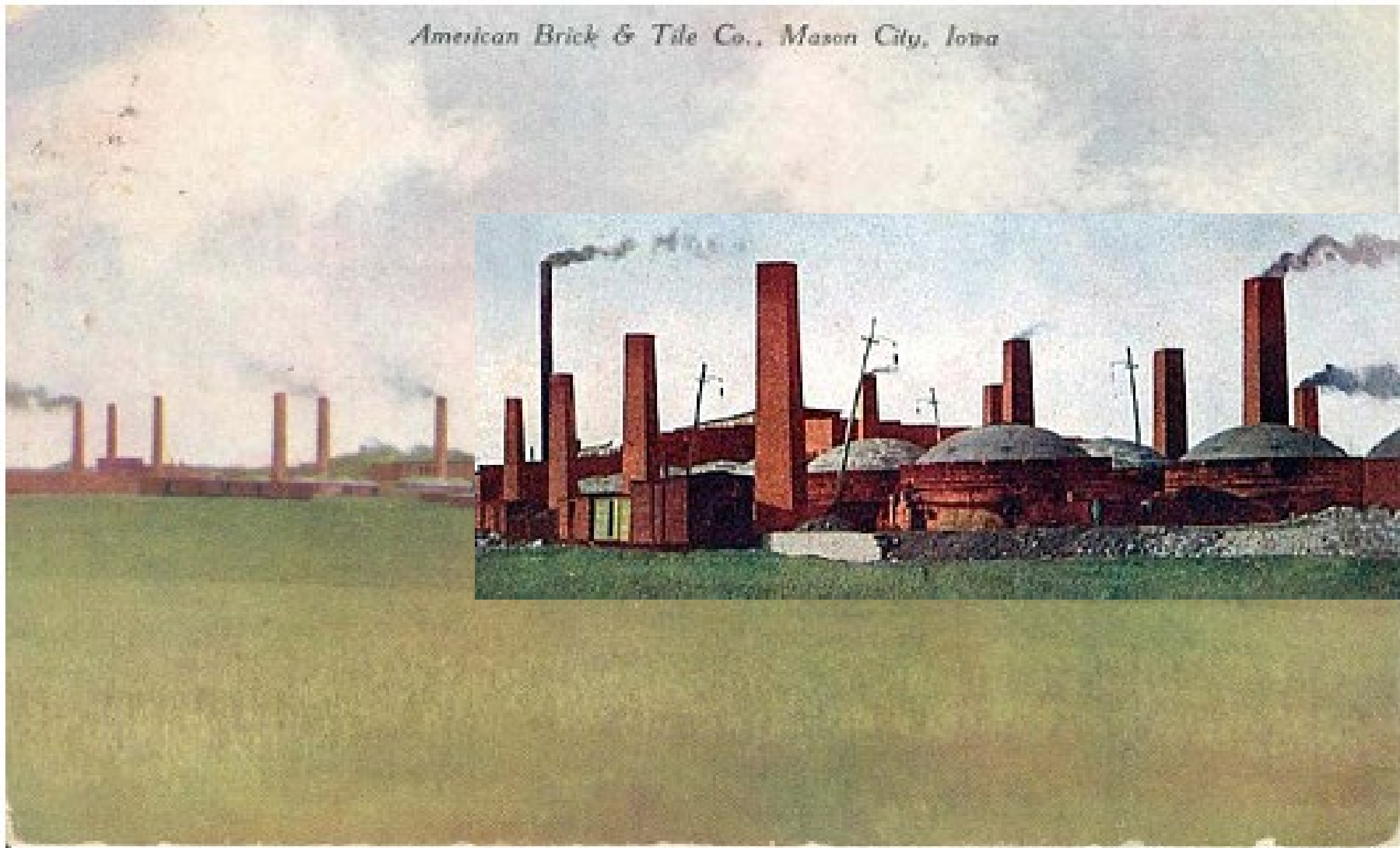




Mason City Brick and Tile Company



American Brick & Tile Co., Mason City, Iowa



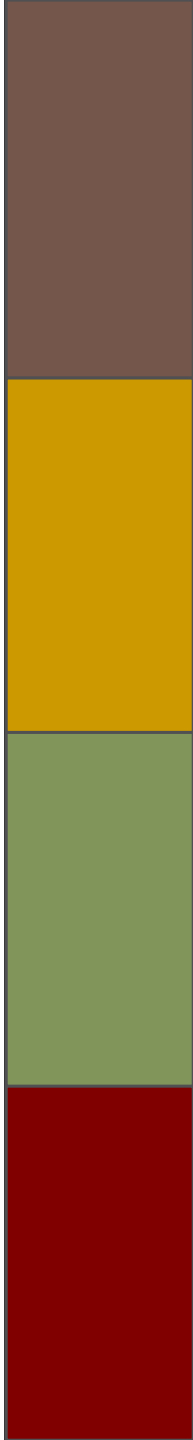
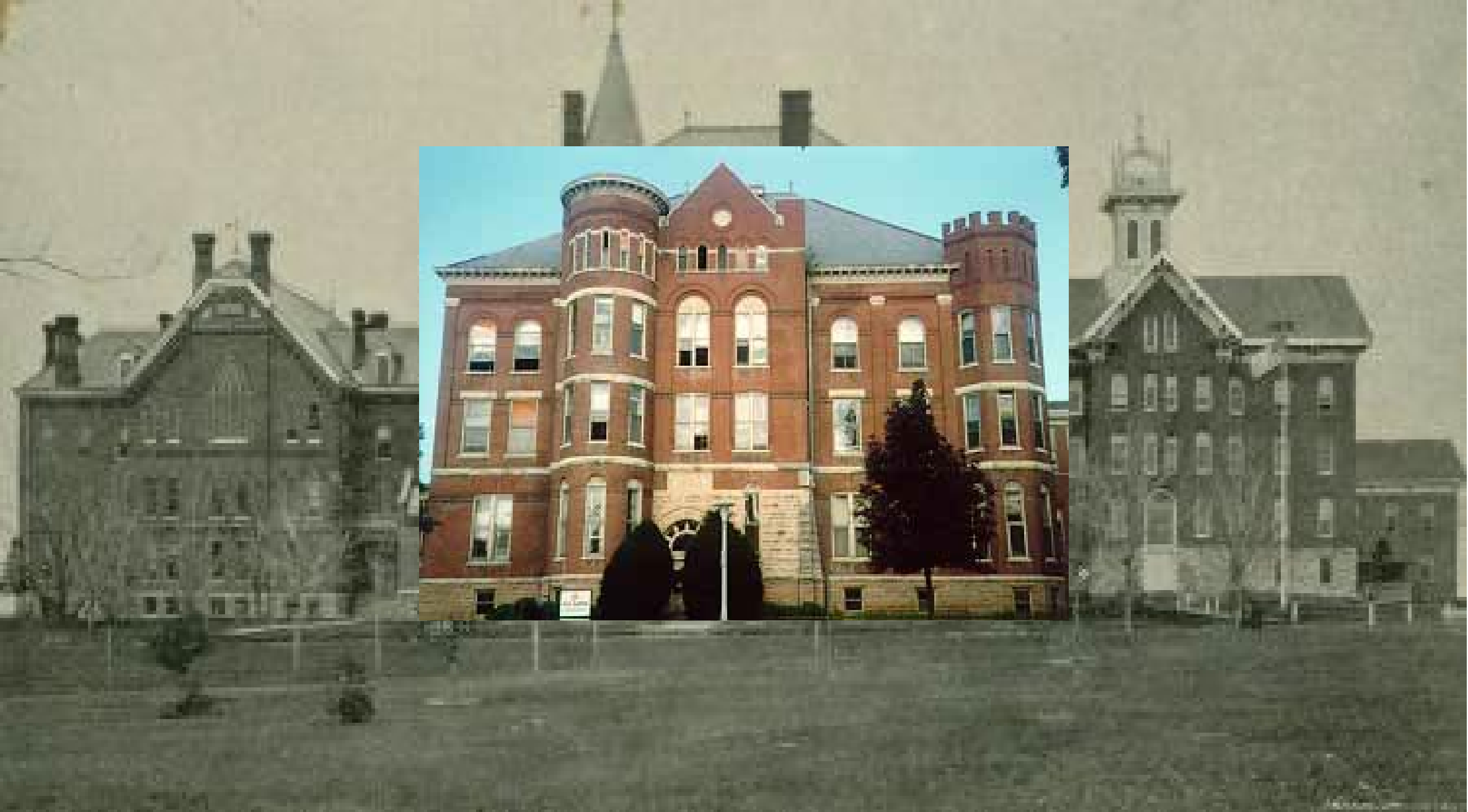


Bennett barn, Franklin County, is a clay tile barn built to house a dairy herd

Brick Barns & Silos

DYSART, IA - Hayward Farm
Johnston Brothers Clay Works
of Fort Dodge built it in 1917







ttage.

Sioux City Brick Since 1913



Carnegie Hall Tower, NYC

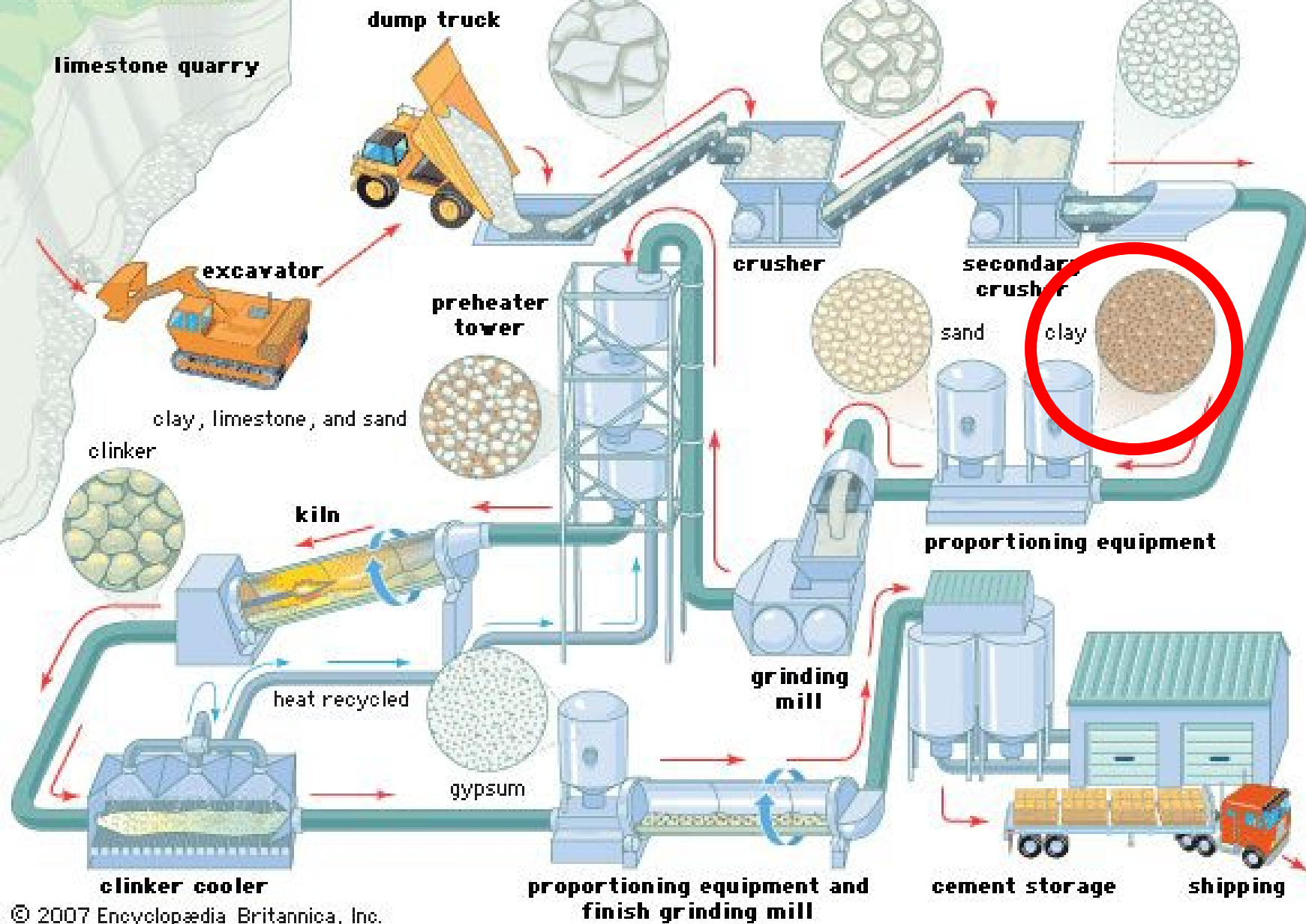


Memphis, TN



Lehigh Hanson Cement

Cement making



Clay in Iowa Soil

Rain enters ground.

Plant debris accumulates.

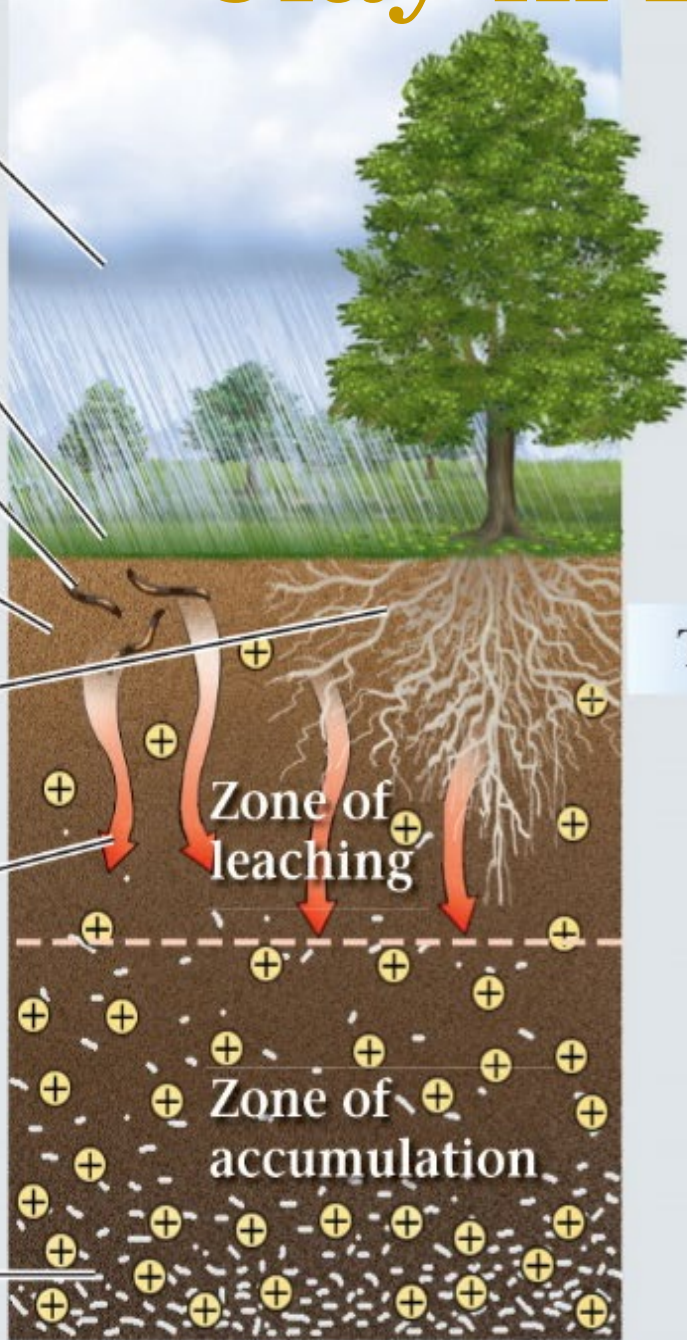
Worms churn.

Microbes and fungi metabolize.

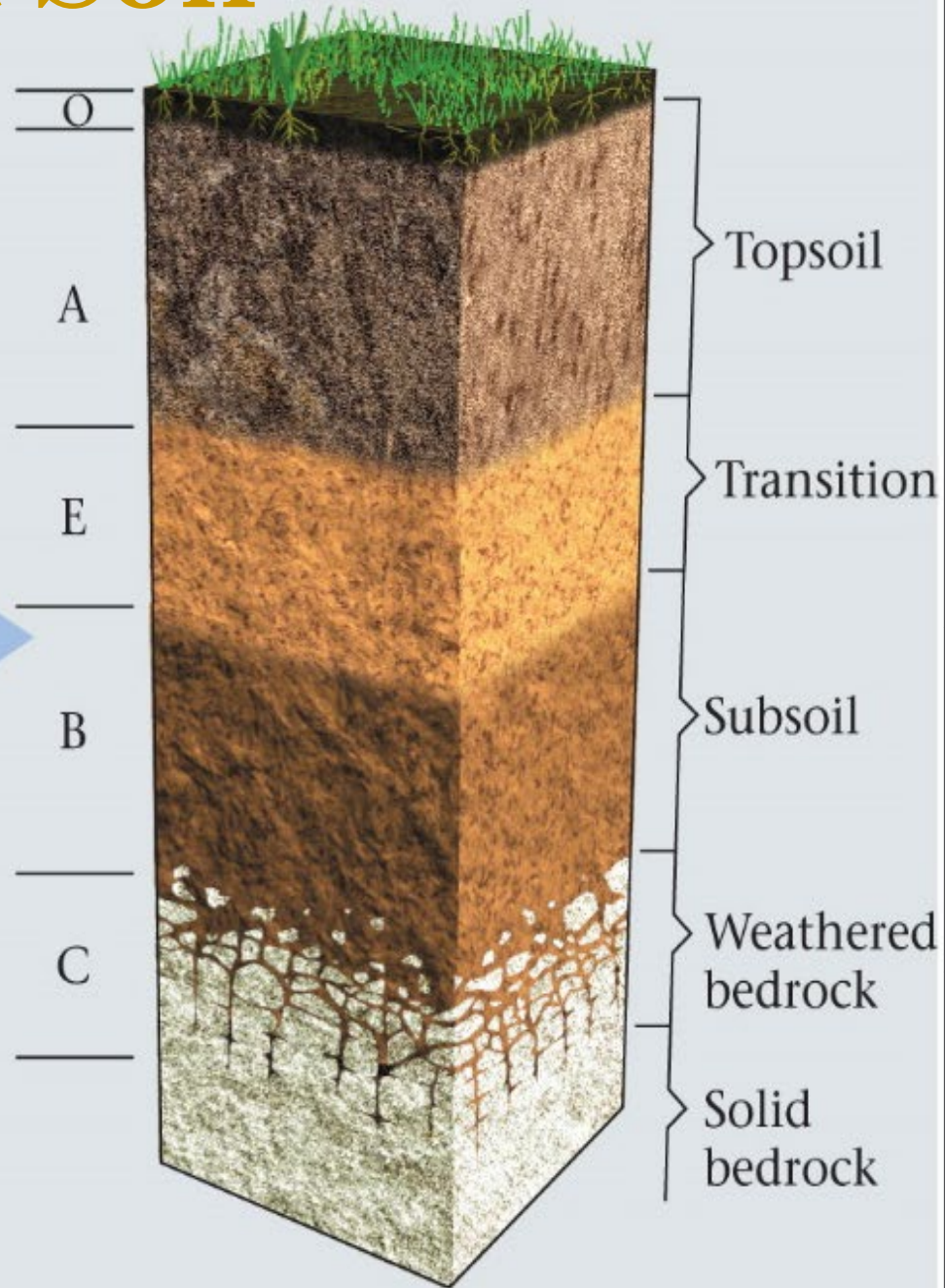
Roots weather minerals.

Downward-percolating water transports ions and clay.

Ions and clay accumulate.



Time



TAMA

Iowa State Soil

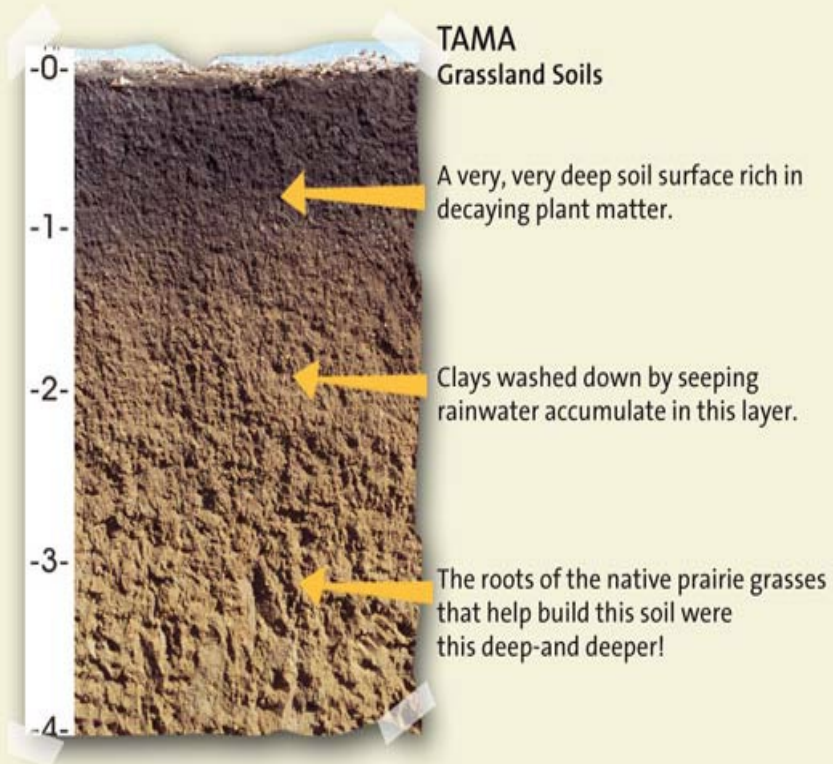


SOIL SCIENCE SOCIETY OF AMERICA



Official State Soil: Tama

What's in it?



Iowa's State Soil

- 933,000 acres in 28 counties
- Highly productive
- High water holding capacity
- CLAY
- Fine-silty, mixed, superactive, mesic Typic Argiudolls



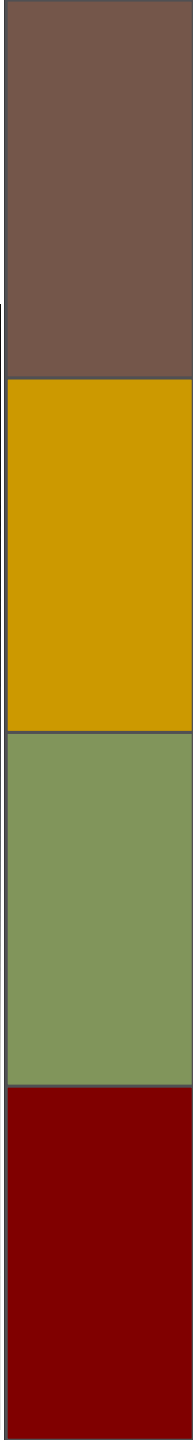
Functional Art



Dean Schwartz



Clary Illian





Refs

- Iowa Geological Survey, 1903, Annual Report Vol. 14
- Iowa Geological Survey, 1943, Ceramic Shales and Clays of Iowa by Charles Gwynne
- Intro. to Clay Minerals – Chemistry, Origins, Uses & Environmental Significance, 1992, B. Velde
- <https://timweitzel.wordpress.com/2017/02/08/the-clay-brick-and-tile-industry-of-mason-city-iowa/>
- <https://www.desmoinesregister.com/story/news/local/kyle-munson/2015/09/25/iowa-barn-foundation-tour-iowa-barns-dysart-hayward-farm/72691238/>
- And many others ☺