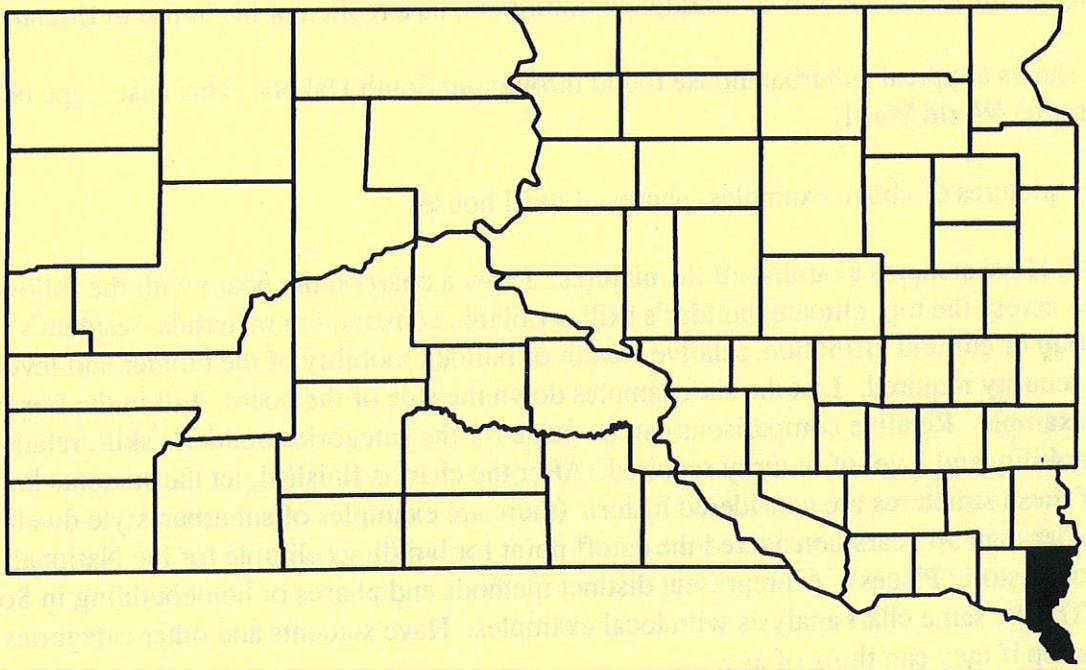
Shelter - Making a Home Activities Section 5, Lesson 38



Shelter

Baker House

SHELTER-Baker House

Objective: Illustrate all types of historic buildings are valuable and can provide useful information

Method: Students compare several examples of South Dakota homes and draw conclusions.

Background: Along with food and water, shelter is a basic human requirement. Shelter takes many forms. What type of shelter people live in tells a great deal about them as individuals and the community or society they belong to.

Figure 1 shows a round earth covered house with a wooden pole frame that first appeared around the year 1200 in present day South Dakota.

Figure 2 shows a bison hide tipi used by Sioux tribes who first entered South Dakota in the 18th century.

Figure 3 shows a sod dwelling typical of those constructed by South Dakota homesteaders from approximately 1870-1910.

Figure 4 shows a typical second generation South Dakota farmhouse dating from the early 1890s to the early 1900s.

Figure 5 shows the 1914 Baker House in Union County, South Dakota. It was designed by a Sioux City architect for F.P. Baker, an English immigrant, as a replica of his house in England.

Figure 6 shows a typical suburban house found throughout South Dakota. This basic type began to appear after World War II.

Materials: pictures of above examples, photos of local houses

Procedure: Have students examine all the pictures. Draw a chart on the board with the following categories across the top: climate, builder's skill, available construction materials, resident's ethnic group or cultural affiliation, relative wealth of builder, mobility of the builder and level of personal security required. List the six examples down the side of the board. Fill in the boxes for each example. Relative comparisons can be made for the categories builder's skill, relative wealth, mobility and level of security required. After the chart is finished, let the students know that all of these structures are considered historic (there are examples of suburban style dwellings that are older than 50 years-considered the cutoff point for buildings eligible for the National Register of Historic Places). All represent distinct methods and phases of homebuilding in South Dakota. Try the same chart analysis with local examples. Have students add other categories across the top if they can think of any.

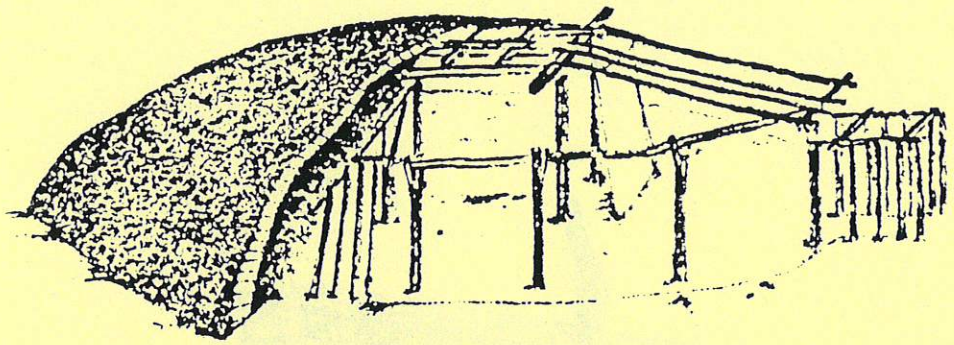


Figure 1

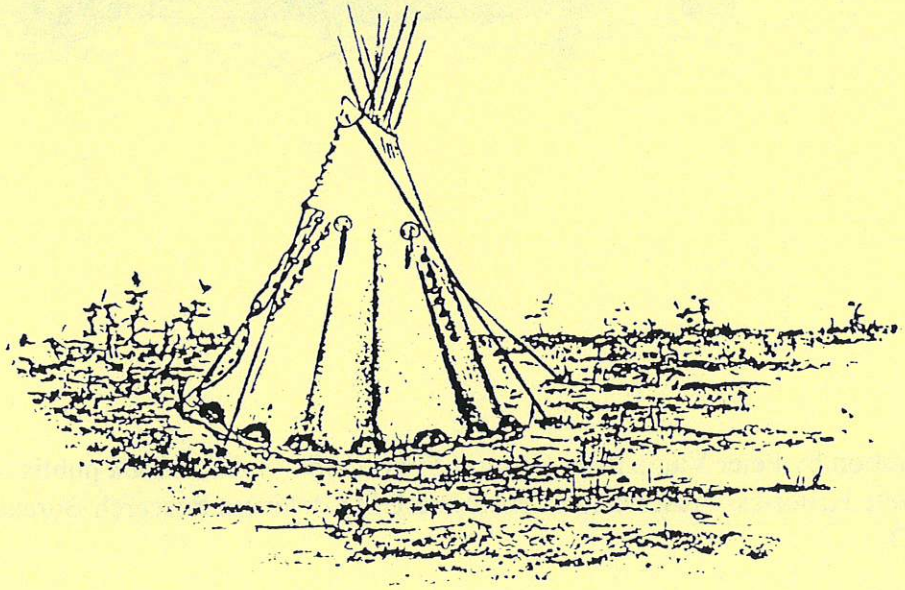


Figure 2

Figures 1 and 2 taken from Young People's Guide to South Dakota Archaeology by Karen P. Zimmerman, illustrations by Mariane Schuld, Kathy Minnery and Pennie Dubsiar

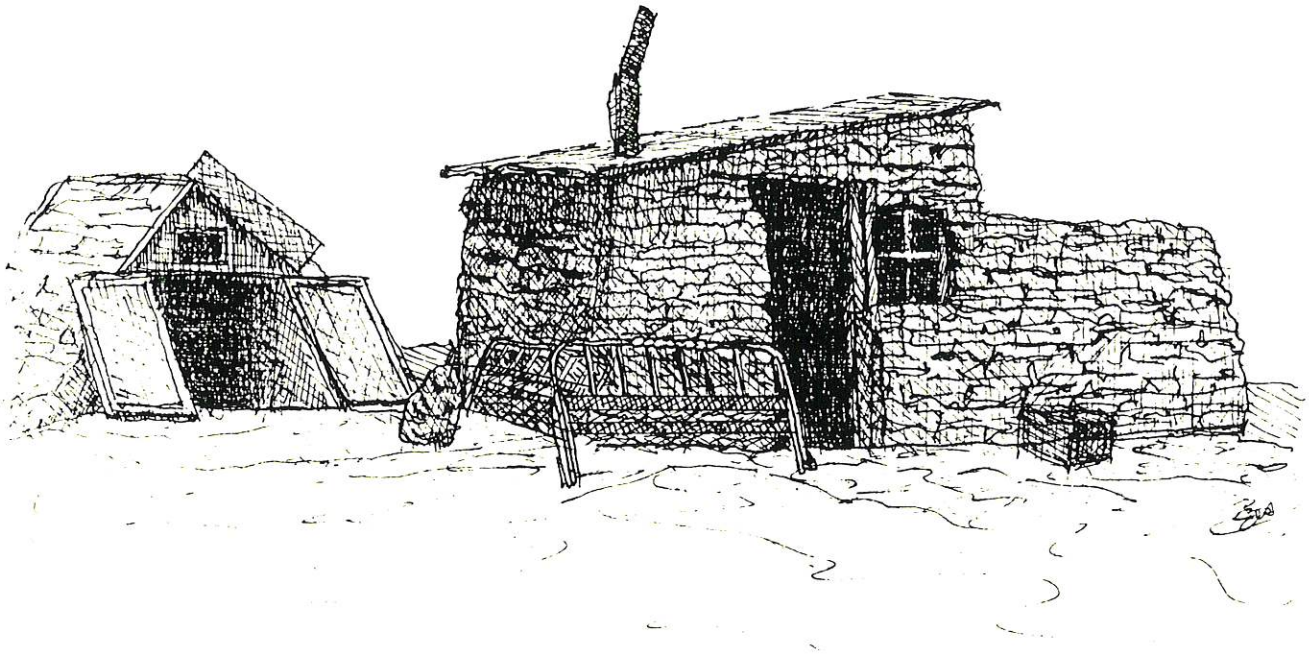
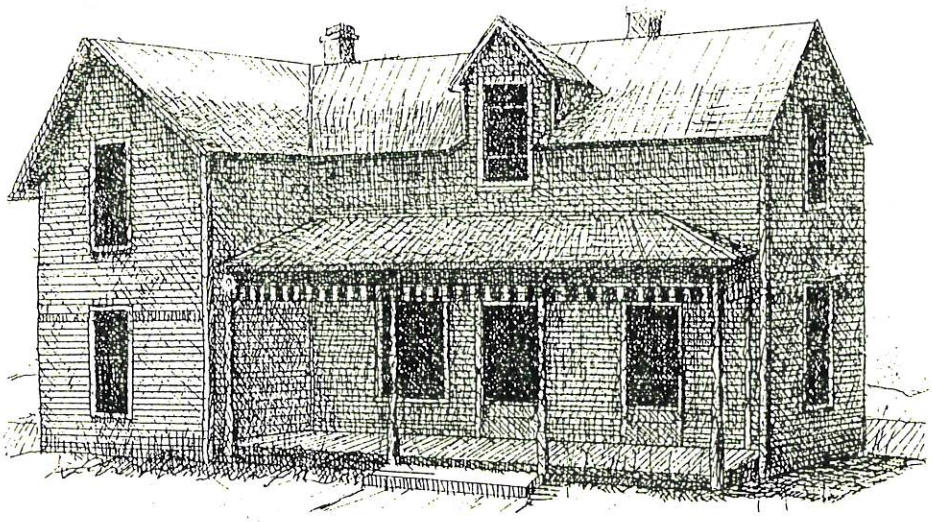
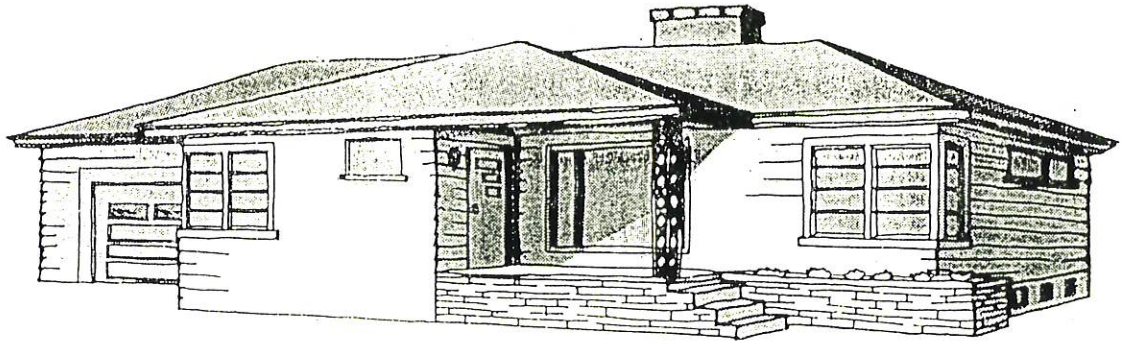


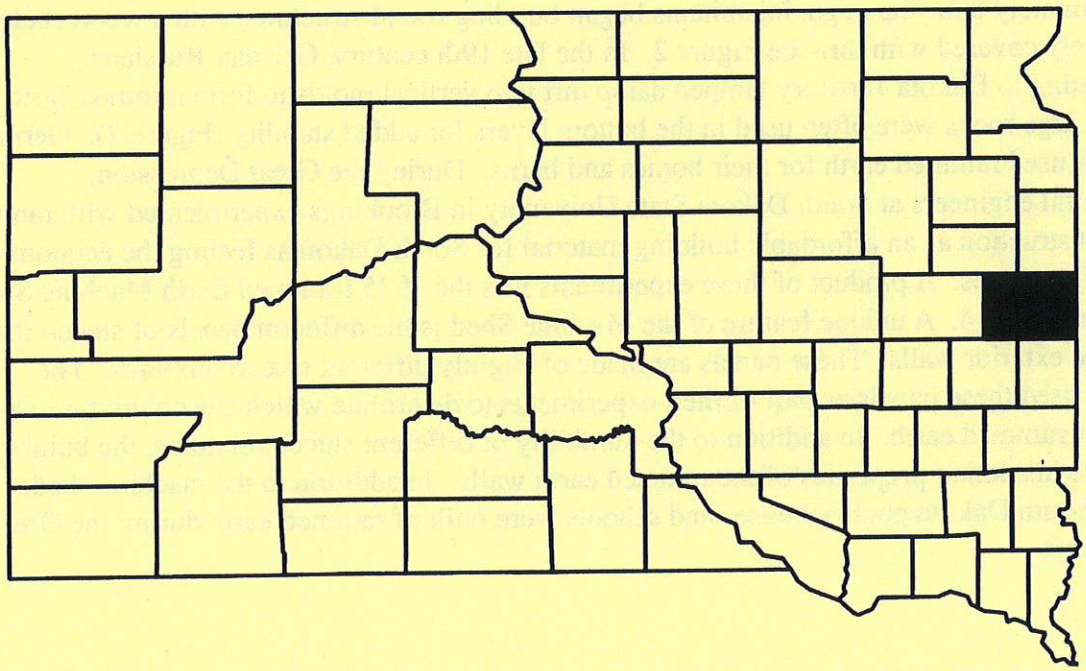
Figure 3 illustration by Peter Vagle from *Historic Sites of SD - A Guidebook* published in 1980 by SD State Historical Preservation Center and USD Business Research Bureau, Vermillion, SD.





From the top: Figure 4 illustration by Peder Vagle from *Historic Sites of SD-A Guidebook* published in 1980 by SD State Historical Preservation Center and USD Business Rsearch Bureau, Vermillion, SD, Figure 5-Baker House, **Figure 6 from** ***Architectural Heritage Education-A Summary Report: Local Architecture as a Teaching Resource for High School Courses***, developed in the Office of the Massachusetts Secretary of State, Michael Joseph Connolly, Secretary, funded in part by the National Endowment for the Humanities, June 1982

Shelter - Making a Home Activities Section 5, Lesson 39



Designing A Shelter

Experimental Rammed Earth Machine Shed
Brookings , South Dakota

DESIGNING A SHELTER-Experimental Rammed Earth Machine Shed

Objective: Students will learn about the challenge of creating adequate permanent shelter in the South Dakota environment during different time periods. They will understand the similarities, differences and innovations developed by people in different time periods who used earthen construction methods.

Method: Students will be given three scenarios and challenged to develop a shelter appropriate to each situation. After discussion of the findings, the instructor will show images of actual structures from each of the three time periods.

Background: Earth or dirt construction has been used by people all over the world for centuries as an affordable, available and flexible building material. The National Register nomination for the Rammed Earth Machine Shed located on the SDSU campus in Brookings states, "Even the Roman natural historian Pliny (23-79AD) described rammed earth towers reportedly erected by the Carthaginian general Hannibal (247-183BC) during his campaign in Spain." A great variety of construction methods were used including making bricks out of a mixture of dirt and binders such as straw or dung (adobe or batsa brick), pressing damp earth into vertical molds and tamping it down to make a wall (rammed earth) and applying a mixture of damp earth and a binder to a stick framework (wattle and daub).

Earth construction was a popular building method for centuries in the area that is now South Dakota. Figure 1 shows a house from the Middle Missouri period approximately 1,000 years ago. This structure featured vertical log construction and woven sticks plastered with mud. Approximately 800 years ago, inhabitants began building round structures with a wood skeleton completely covered with dirt-see Figure 2. In the late 19th century, German-Russians immigrating to Dakota Territory tamped damp dirt into vertical molds to form rammed earth walls. Large rocks were often used in the bottom layers for added stability (Figure 3). German-Russians used rammed earth for their homes and barns. During the Great Depression, agricultural engineers at South Dakota State University in Brookings experimented with rammed earth construction as an affordable building material for South Dakotans feeling the economic strain of the times. A product of these experiments was the 1935 Rammed Earth Machine Shed shown in Figure 4. A unique feature of the Machine Shed is the different panels of stucco that cover the exterior walls. These panels are made of slightly different stucco mixtures. The builders used these panels as part of their experiments to determine which stucco mixture worked best over rammed earth. In addition to the durability of different stucco mixtures, the builders tested the insulating properties of the rammed earth walls. In addition to the machine shed, several South Dakota poultry houses and schools were built of rammed earth during the Great Depression.

Materials: Copies of Figures 1-4 supplied with this unit.

Procedure: Students may be divided into smaller groups or the class may participate as a whole. Describe each of the following situations and have the students list building materials and methods they would use to create the building required in each situation. The teacher may want to draw a simple site map on the board for each situation and add or subtract to each scenario as deemed appropriate. After the students address each situation, discuss how the challenges faced in each situation are similar and how they are different. Discuss the historic examples to show students how people used the cheapest and most readily available material, earth, for their varied building needs.

Situation 1 - It is the year 1,000. Your family needs to build a permanent house before winter arrives in approximately one month. You live on rolling terrain just above a stream. Prairie grass is the only vegetation you can see from the spot where you must build your home in order to be near water.

Situation 2 -It is 1872. Your family has just immigrated to South Dakota from Europe. Your homestead claim, the place where you must build your house, is located 10 miles from the nearest town served by a railroad. The land is relatively flat with a few small, scattered trees. You have one month to build your home before cold weather starts. You can only afford one trip to town to buy supplies. You have $10 to spend in the one store in town that sells building supplies. Windows cost $1.50 each, lumber for a door costs $3 and a cooking stove costs $5.

Situation 3 - It is 1931. You are a South Dakota farmer who needs to build a new chicken house because the old one made of wood was destroyed by a tornado. Right now you can not afford to buy all the lumber needed to build a new chicken house.

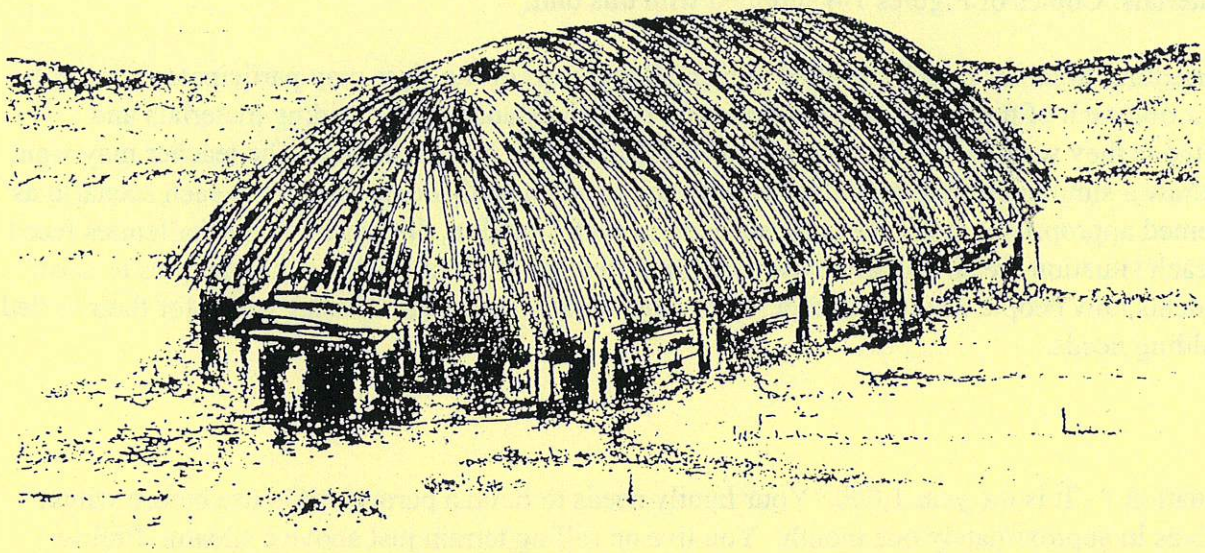


Figure 1-Middle Missouri House
Illustration from *Young People's Guide to South Dakota Archeology* by Karen P. Zimmerman
Illustrations by Marianne Schuld, Kathy Minnery and Pennie Dubisar

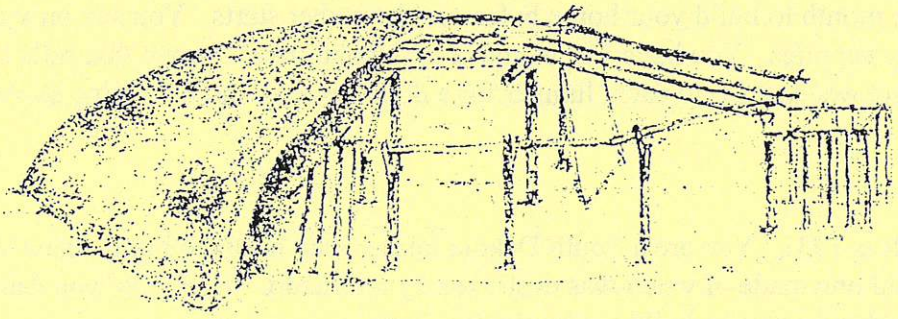


Figure 2-Round structure with a wood skeleton and covered with dirt
Illustration from *Young People's Guide to South Dakota Archeology* by Karen P. Zimmerman
Illustrations by Marianne Schuld, Kathy Minnery and Pennie Dubisar

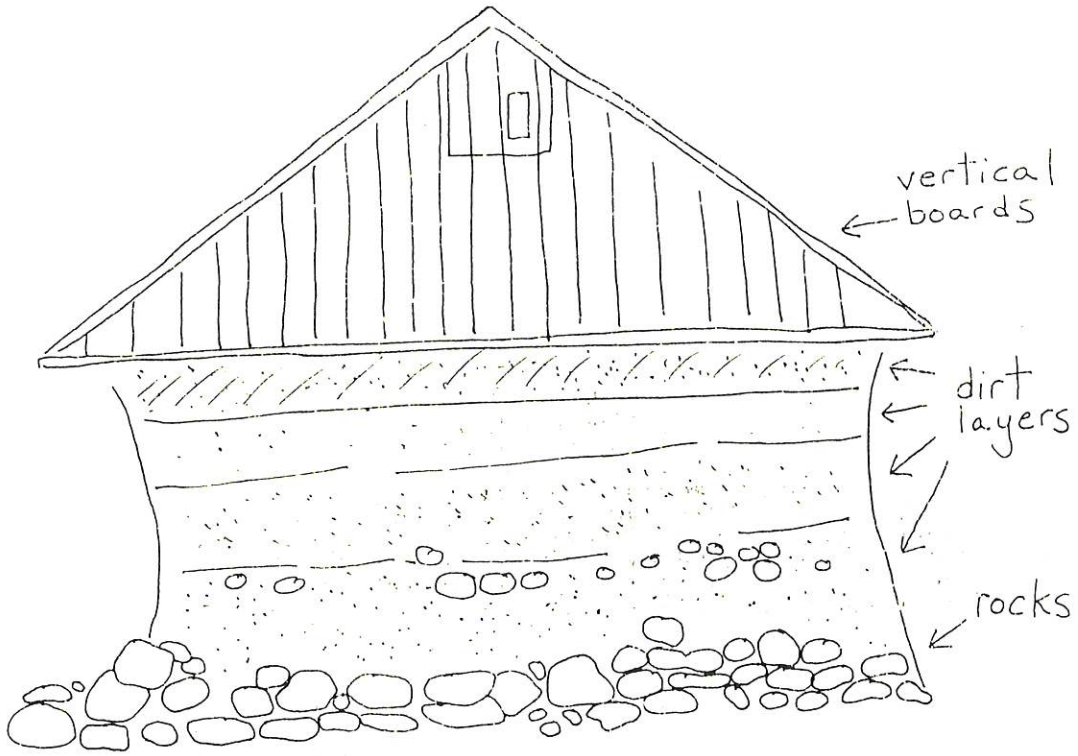
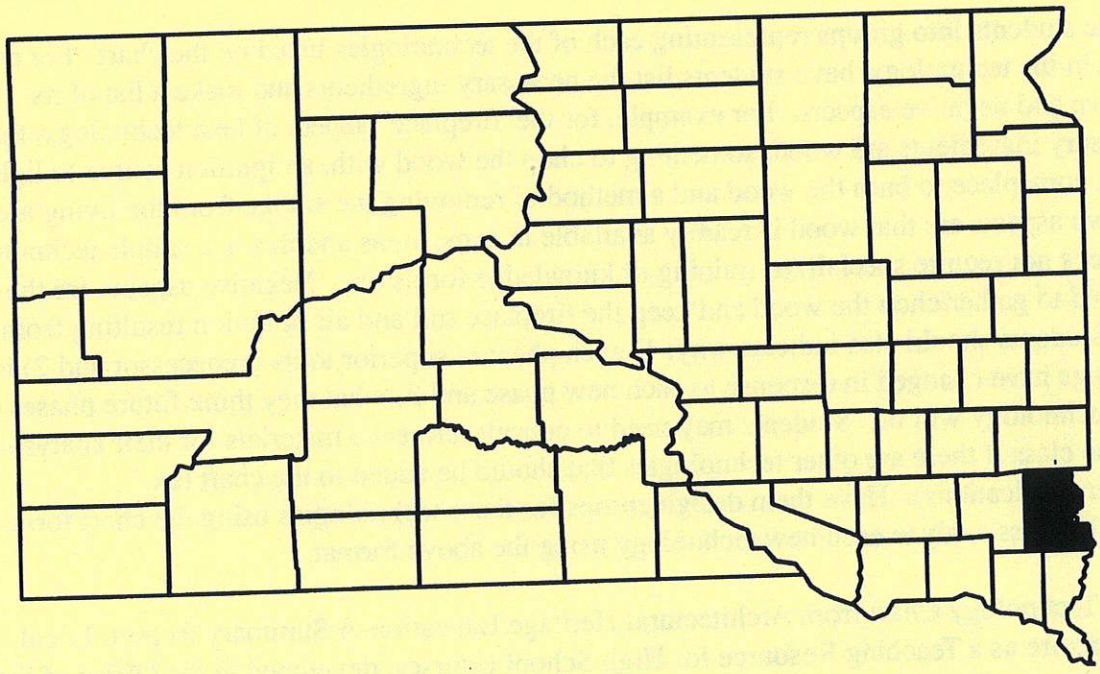


Figure 3-German Russian barn

Figure 4-Experimental Rammed Earth Machine Shed

Shelter - Making a Home Activities Section 5, Lesson 40



Home Technology

Light-Dark, Hot-Cold, Indoor-Outdoor (Kruger-Dam)
Canton Vicinity

HOME TECHNOLOGY: Light-Dark, Hot-Cold, Indoor-Outdoor

Objective: Students will investigate the scientific advances in materials and mechanical processes that impact everyone's environment.

Method: Students will consider the requirements and processes involved in making buildings comfortable and convenient.

Background: The Klondike Mill and Kruger Dam, located on the South Dakota-Iowa border on the Big Sioux River outside of Canton, South Dakota, were built in 1883. This water wheel powered facility was used for grinding grain into flour, cattle feed mixing and generating electric power for customers as far away as Freeman, South Dakota. The site includes a 30 x 50 foot wooden mill building, exterior water wheel, a mill race and the dam. Inside, the mill had shafts, gears and a stone grinder.

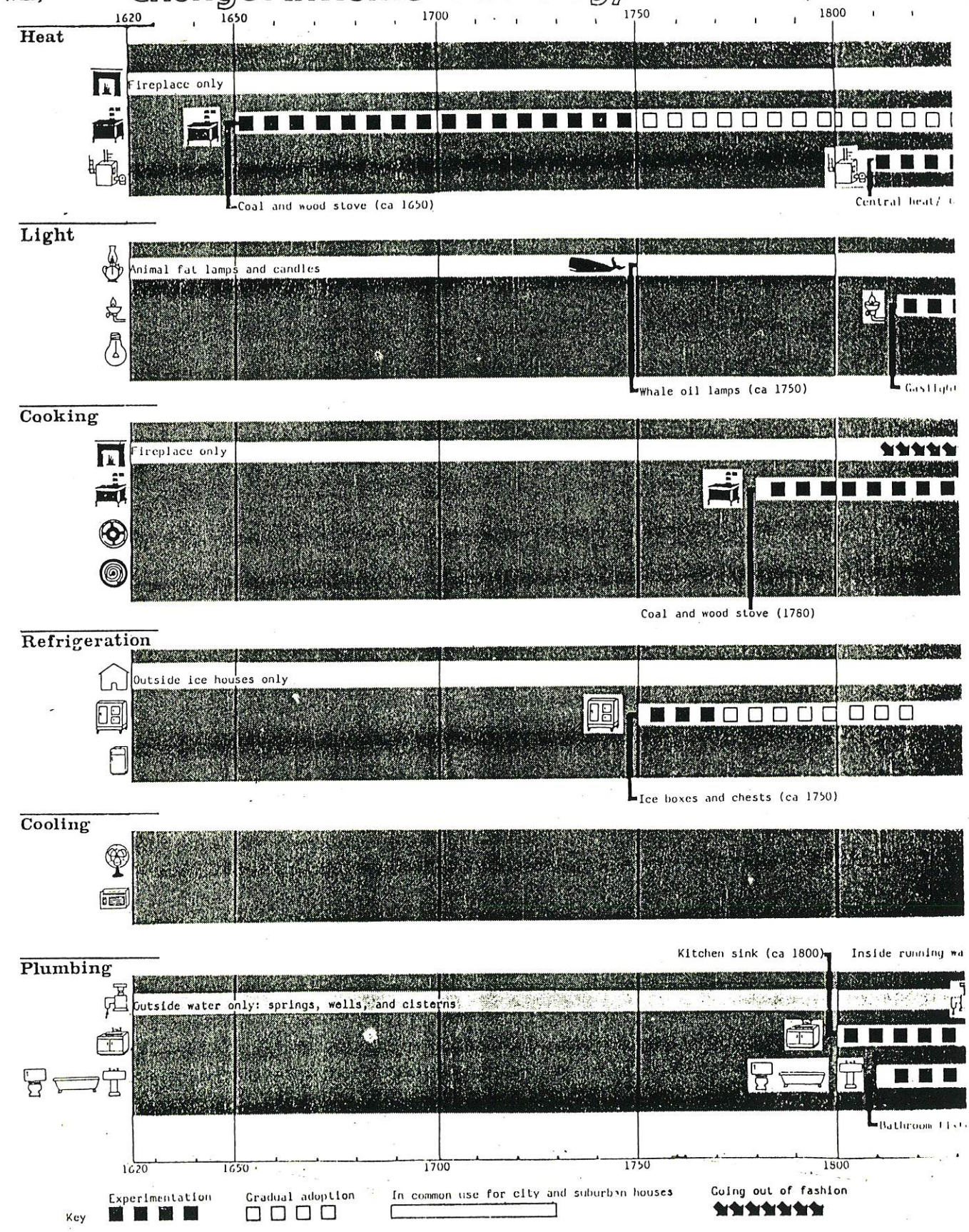
Materials: copies of the Home Technology chart

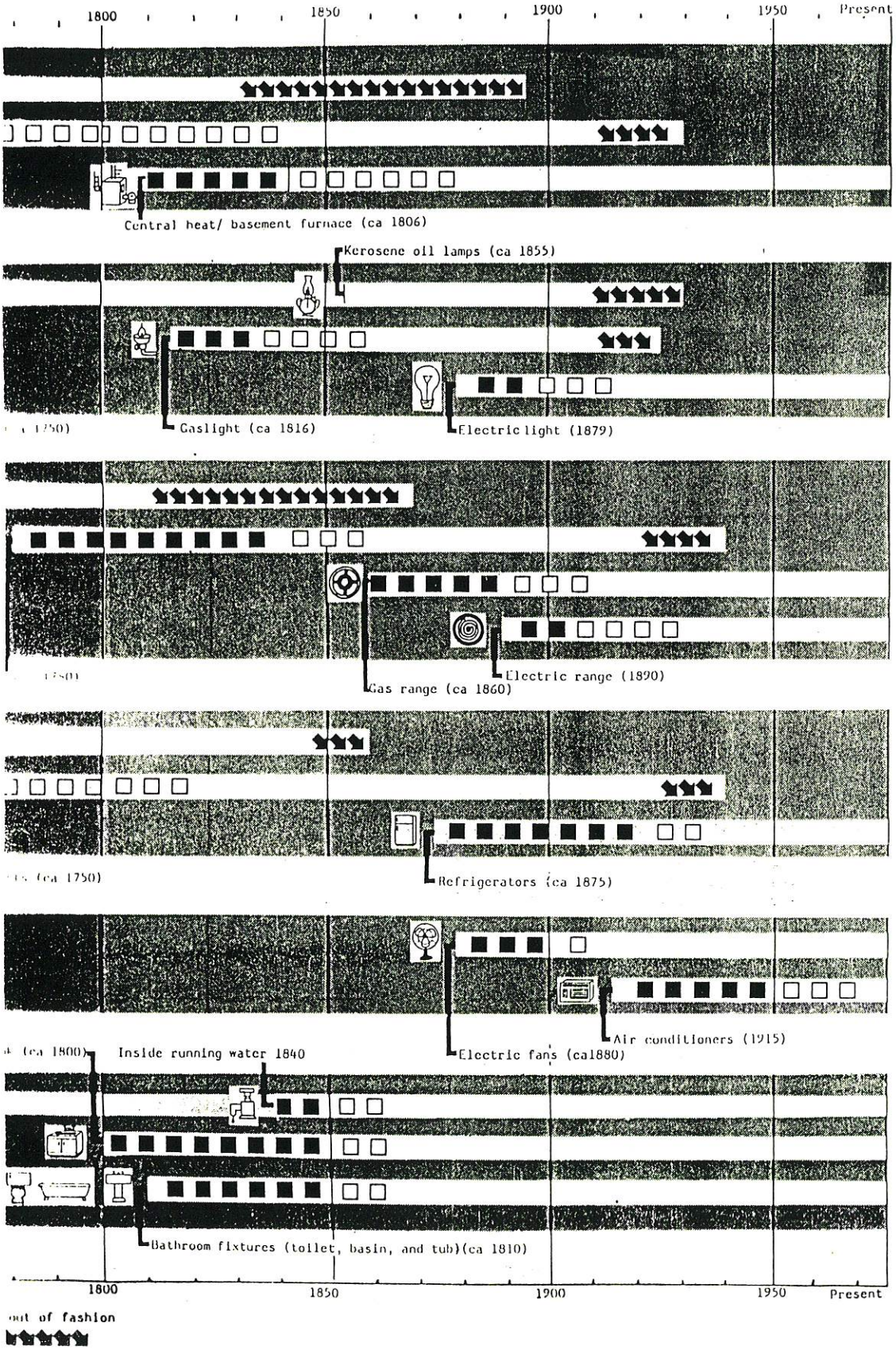
Procedure: Show students the picture of the Klondike Mill and Kruger Dam. Ask why this building could be important to people who lived 45 miles away. (generated electric power) Why is electricity so important to us? What things can't you do when the electricity goes out? Have students name other things that make the environments where we live, work and play more comfortable and convenient. Make the point that home technologies have changed over time just like architectural styles.

Divide students into groups representing each of the technologies listed on the chart. For each phase in the technology, have students list the necessary ingredients and make a list of its positive and negative aspects. For example, for the"fireplace" aspect of heat technology, the necessary ingredients are wood, something to chop the wood with, an ignition source to light the wood, someplace to burn the wood and a method of removing the smoke from the living area. Positive aspects are that wood is readily available in some areas and this is a simple technology that does not require specialized training or knowledge for its use. Negative aspects are the effort required to gather/chop the wood and keep the fireplace full and air pollution resulting from the fire. Students should also indicate why: 1) each phase is superior to its predecessor and 2) how buildings have changed in response to each new phase and 3) what they think future phases of each technology will be. Students may need to consult reference materials for their analysis. Ask the class if there are other technologies that should be added to the chart (ex. telecommunications). Have them design entries for these technologies using the chart form. Have the class analyze each new technology using the above format.

Home Technology Chart from Architectural Heritage Education-A Summary Report: Local Architecture as a Teaching Resource for High School Courses, developed in the Office of the Massachusetts Secretary of State, Michael Joseph Connolly, Secretary, funded in part by the National Endowment for the Humanities, June 1982

Changes In Home Technology





ARCHITECTURAL HERITAGE EDUCATION
Developed in the Office of the Massachusetts Secretary of State
Michael Joseph Connolly, Secretary
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