

**UNIT TWO**  
**EARTHLODGE**





## UNIT TWO: EARTHLODGE



### INTRODUCTION

We invite you and your class to spend five days exploring what we have learned about the Pawnee Indians and their ancestors during their time in the place we now call Kansas. The unit focuses on the Pawnee earthlodge building tradition, emphasizing environment, process, knowledge-building, and preservation.

The material for each day is organized into:

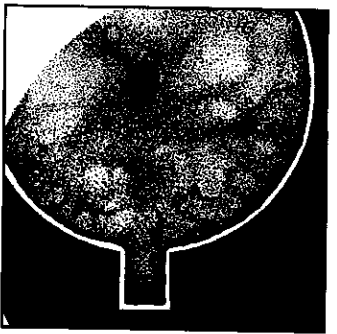
- Learning Objectives and Materials to Use
- Earthlodges, information about Pawnee earthlodges
- Pawnee, information about the historic tribe
- Worksheets and suggestions for use. Any of the sheets can be used for any day's study.

We encourage you to use them in ways best suited to your teaching style and student needs.

- Associations, a group activity that guides students through the unit day by day
- Studying the Past, information about the science of archeology and Kansas examples of sites and artifacts
- Vocabulary

The bookmark template, keyed to each day's study, and Handout #2: The Boy and the Mud Pony follow on pages 40-43. A sketch of a Pawnee earthlodge village is included on page 44. Sources and a glossary are located at the end of the book.

Coordinate the unit of study with your school and public librarians. Books relating to the Pawnee, archeology, architecture, agriculture, corn, bison, religions, geography, climate, horses, astronomy, and many other topics can be featured. Familiarize yourself with all the material in the guide before the week begins.



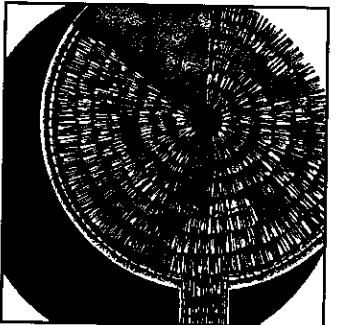
## Pawnee

# Earthlodge

### Earth Covering

Pawnee people built large round houses, covered with earth. It took about 10 tons of dirt to cover the roof! Sod blocks around the walls insulated the earthlodge. The house was warm in winter and cool in summer.

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Topeka, KS 66615-1099  
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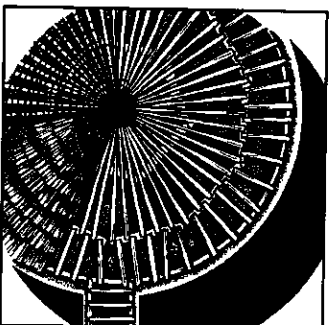
## Pawnee

# Earthlodge

### Grass Layer

Under the earth covering was a thick layer of prairie grass. These grass bundles helped insulate the earthlodge against heat and cold.

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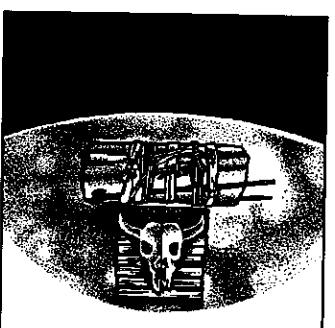
## Pawnee

# Earthlodge

### Wooden Frame

The wooden frame of the earthlodge had to bear tons of weight. Builders tied the wood in place with strips of rawhide.

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## Pawnee

# Earthlodge

### Medicine Bundle & Altar

Pawnee people depended on gardening and hunting for food. Symbols of corn and bison held special places of honor in the household.

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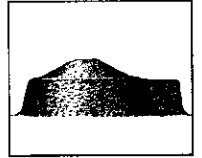
is a partner in preserving the archeology of Kansas...

...and knows that our state's sites are unique, our past cannot be replaced, and every

Kansan must  
**STAND**  
**GUARD!**



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## Pawnee Storytelling

Pawnee people told all kinds of stories. Some stories reminded everyone of good people and good times in the past. Some stories taught the children how to behave. Sometimes the hero of a story showed the people a great moment in the history of the Pawnee.

Fables are stories we use to teach about the world. A fable has a problem and a solution. The solution is the lesson we are to learn. Famous fables, such as “The Fox and the Grapes,” began as part of an oral tradition and were written down later. School, church/temple, and family stories teach us, too. Stories among friends tell us about a soccer game, a party, or other event. The telling and the listening connect us with one another.

The story that follows tells about a change in the life of the Pawnee. It has been told for centuries, handed down from generation to generation. Although some of the details may have changed with the passing years, the boy and his mud pony have been together for a very long time. They are part of the oral tradition of the people.

### The Boy and the Mud Pony

There was a village, and in the village lived a poor boy. His parents were poor, for they had no ponies. The boy was very fond of ponies. He often sat upon the bank and watched when the other boys watered their horses.

One day the boy made up his mind that he would have ponies of his own. He arose and brought willow to make a little corral for his ponies. He dug some clay, which he took to the corral. He carried water there and poured it over the mud. Then he began to make his ponies. He also got white clay, which he put upon one pony, so that it was bald-faced.

Every day the boy watered his ponies. He would carry them down to the creek, then dip their noses in the water. He would take them back to the corral, get grass and green young cottonwood shoots, and place these before the ponies for food.

One day the boy went down to see his mud ponies and found only one standing, for the other had crumbled. The boy cried awhile and said, “I will take good care of the one I have left.” So every day he would go down to the pony and stay there.

One day while the boy was with his pony, the people broke camp and went on a buffalo hunt. Separated from his family and community, the boy dreamed that his pony—the bald-faced one he had made of mud—was alive and speaking to him: “My son, I know you are poor. The Mother Earth has taken pity upon you. I am part of the Mother Earth. I am to belong to you. You must do as I say, and you will be a chief among your people.” The boy woke up, and it was broad daylight. So he went to the place where he had

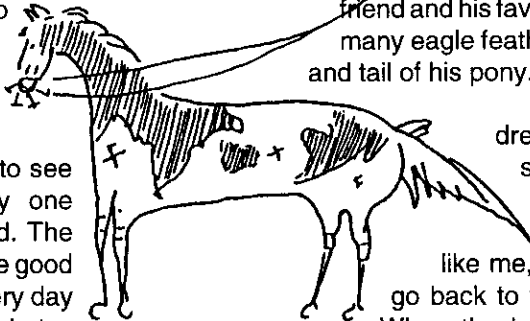
left his pony. There, in front of the little willow corral, stood a fine-looking bald-faced sorrel.

With the help of his pony, the boy not only found his family again, but also had many adventures. The pony told the boy in a dream how to cover himself with dust and ride fearlessly into battle, invisible to the enemy. The boy earned great respect, and every time a problem came up, the pony told him in a dream what to do. Each time, the boy did just as he was told. Each time, the adventure brought the boy more respect.

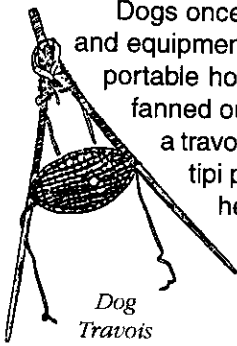
Eventually the boy was made a leader of his people. Although he had other horses now, the bald-faced sorrel—the pony once made of mud—was still his friend and his favorite. On fine days the boy took many eagle feathers and tied them to the mane and tail of his pony.

One night the boy had a dream. His pony came to him and said, “My son, my doings are over. You are a chief. You shall rear the colt that looks like me, and it will take my place. I will go back to the place where you got me.”

When the boy awoke, it was stormy and raining hard. He went out hunting the pony, to blanket it, but it was not to be found. The next morning the boy went out. On the side of a hill, he found a pile of mud, still in the shape of a pony. He cried, and in the night he went to sleep and had another dream. The pony came and said, “My son, go home. You are now a chief. You are no longer poor. Take care of the colt, for it will take my place, and you will have the same power that you had before, for it was the Mother Earth gave you the power and not I. Do not cry, but go home and think of me no more.”

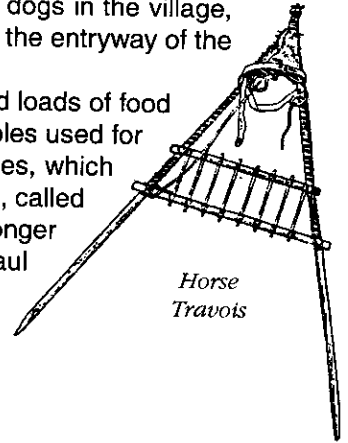


**Horses and Dogs.** Names of Pawnee horses described colors or markings. The dogs in the village, though, had individual names. During a winter storm the ponies could be stabled in the entryway of the earthlodge. Dogs, however, were never allowed inside the house.



*Dog  
Travois*

Dogs once served as the pack animals for each village. Some dogs carried loads of food and equipment on their backs. Others wore leather harness to drag the tipi poles used for portable houses while the people hunted bison. Stretched between the poles, which fanned out behind the dog, was a frame for carrying the load. This vehicle, called a travois, could be much bigger once horses arrived. A horse could pull longer tipi poles and a larger hide cover for the house. A horse could also haul heavier loads of bison meat home to the earthlodge.



*Horse  
Travois*

In the story the mud pony speaks to the boy through dreams. Each time there is a lesson to be learned, the pony teaches the boy while he is asleep. Every problem has a solution, which is given to the boy in a dream. What can dreams teach? \_\_\_\_\_

\_\_\_\_\_

Describe one of your dreams. Does it teach you or scare you or tell you something you did not know? What is the difference between your brain asleep and your brain awake? Find out about the electrical activity in your brain.

\_\_\_\_\_

Who gives the pony to the boy? \_\_\_\_\_

Why do you think this particular boy was given such a wonderful gift? \_\_\_\_\_

\_\_\_\_\_

Why does the boy become a leader of his people? \_\_\_\_\_

\_\_\_\_\_

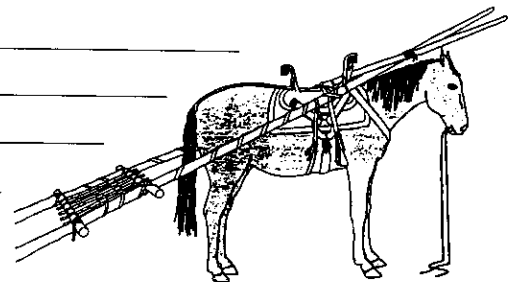
The boy is a hero to his people and to all the people who have heard the story over the centuries. List some qualities that make him special. \_\_\_\_\_

\_\_\_\_\_

One thing I have learned about Pawnee culture: \_\_\_\_\_

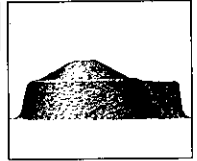
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*Horse with travois*

**Extra credit.** Read some fables and tell one to a friend. *Aesop's Fables* has some stories about animals who get into trouble.



### Pawnee Storytelling

Pawnee storytelling could be sacred, instructional, historical, or entertaining (or a combination). In the early 1900s George Dorsey collected two versions of the Pawnee story about the mud pony. One is called part of the “true stories of the heavenly beings,” because it was the Supreme Deity, *Tirawa*, who gave the poor boy the song and dance that allowed him to bring the first horses to the people, which led to his selection as the first chief and the establishment of the “chiefs’ society.” Dorsey (1904b:152-156) categorized the other version, given in part here, as one of the “boy hero” stories. The boy’s power comes to him from Mother Earth through the pony. By meticulously following instructions, the boy

succeeds and is elected a chief of the people. Individuals took responsibility for a specific hunt as “hunt chief,” but membership in the chiefly class in Pawnee society was normally a hereditary position and would have been out of the range of possibility for a poor boy. Although inherited, the position required dignity, wisdom, concern for the welfare of the people, evenness of temper, generosity, and skill in negotiations. A person without these qualities would not be respected. The poor boy who became a chief may have been a very old story, tracing a chief’s authority back to either Mother Earth or *Tirawa*.

### Hunt Chief

Providing protection against starvation was a respected position, and the man who assumed the duties of “hunt chief” for a specific summer or winter hunt possessed much experience. He was under heavy obligations to organize and administer the journey, choosing good campsites and assuring the well-being of the whole village on the move. The position was undertaken only by those who had earned the respect of their communities. Over a period of months, he led the men as a hunt-related brotherhood, which acted as hunt “police.” Hunting societies could fragment and coalesce for making war or defending the villages, acting as warrior societies, depending on the specifics of any situation. The hunt chief also led the women, whose work converted the harvest of the hunt into food, tools, tipi coverings, and clothing for the people.

### Horses and Dogs

Horses profoundly changed Pawnee society. The trade for horses, like trading for goods with the French and later Americans, brought them into contact with a much broader population. Horses came to represent wealth, further emphasizing the social stratification in Pawnee culture. A family with status and wealth might own 20 to 30 horses; a poor family might have only one or none. Hunting from horseback required some changes in methods for killing bison and other game. The material culture of the Pawnee changed and expanded to include saddles and other horse-related equipment.

In pre-equestrian days (before the mid-1600s), portable shelters made of hides were transported by dogs. Dogs either carried loads on their backs or were trained to draw travois. A travois was a simple vehicle

made of poles whose front tips were bound together for attachment at the animal’s shoulders, while the butt ends dragged along the ground. Midway up the poles was a frame to carry the load. The poles for the tent were tied to the pack, and the ends dragged behind. By the 1720s, when horses had changed the lifeway of most Plains Indians, the travois was adapted to the horse. Horses could carry heavier loads and longer tipi poles, so the skin tents were larger.

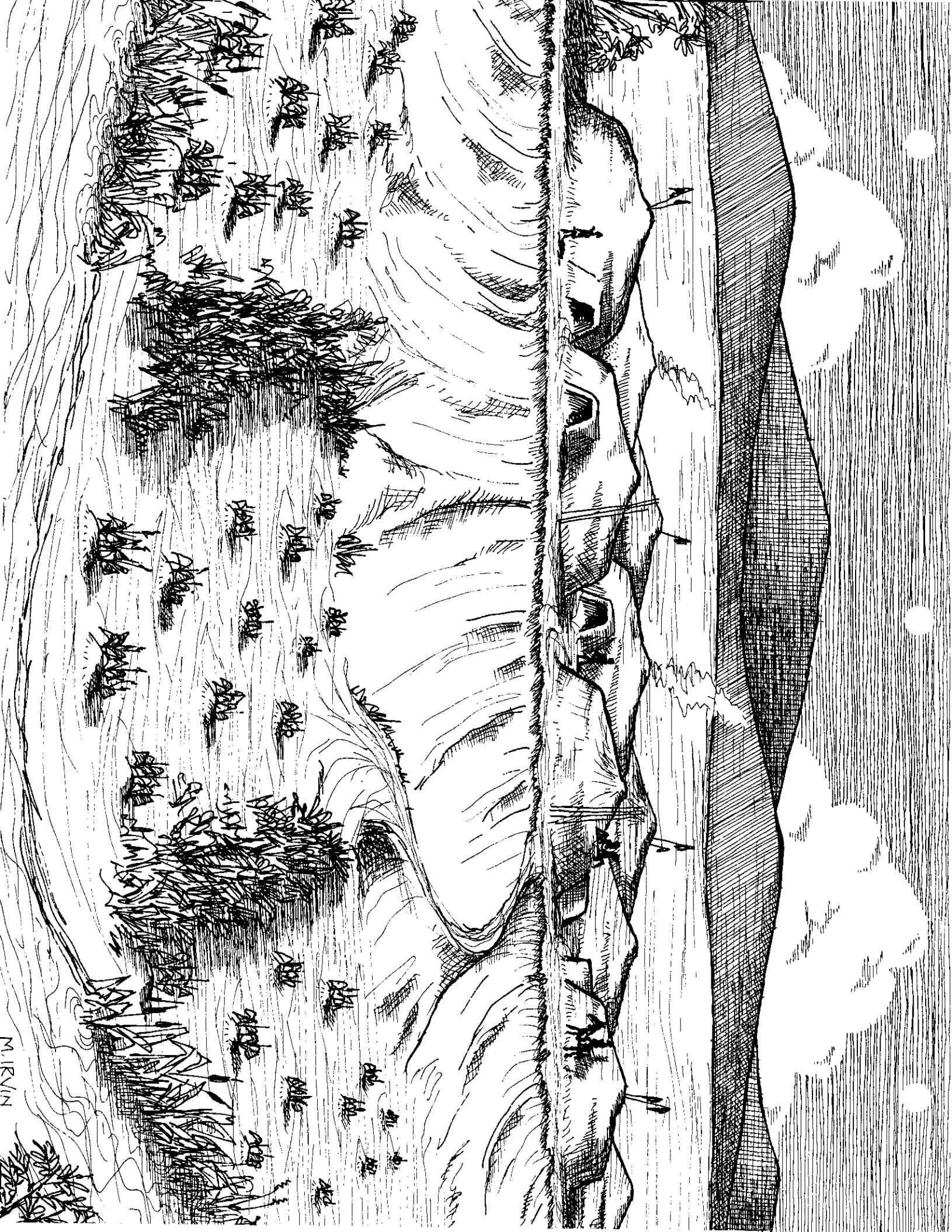
Horses were called by names that described their coloration but were not given individual names. Dogs, on the other hand, were often given names. The dogs were never allowed in the earthlodge, and some families chose not to keep them at all once horses replaced dogs as pack animals. Horses were stabled in the entryway of the earthlodge during storms.

### Activity: Mud Pony

**Materials:** Modeling clay, poster board, markers

**Teacher Preparation:** None

You may want to turn this story into a project, with students creating their own ponies from modeling clay or doing illustrations or a story board. Students can make a corral of willow branches to hold all the ponies. Define the terms “bald-faced” and “sorrel.”



M. IRVIN



## LEARNING OBJECTIVES AND MATERIALS TO USE



### Getting Ready      Paint Pouch

Getting ready was an important step in Pawnee work and ceremony. No work could be done without its ceremony, including ritual preparation. And of course no work could begin until the raw materials had been collected and shaped or altered in some way. The activity below (intended for younger students) would be a good “getting ready” project for the week prior to your unit of study.

**Activity:** Paint pouch and Pawnee designs

**Materials:** Small brown paper bag for each student, string or yarn (about 2 yards for each student), paper punch; for older students—graph paper

**Teacher preparation:** None

Colors, like many elements of Pawnee life, were associated with specific directions, forces, deities. Pigments and dyes were made from minerals, special soils, or plants. Pigment, such as ocher, was crushed and could be mixed with animal fat or water for application. Plants, such as sumac, provided dyes when heated with water. Small bones with the sponge-like (cancellous) ends exposed were used as brushes, as were the inner fibers of twigs.

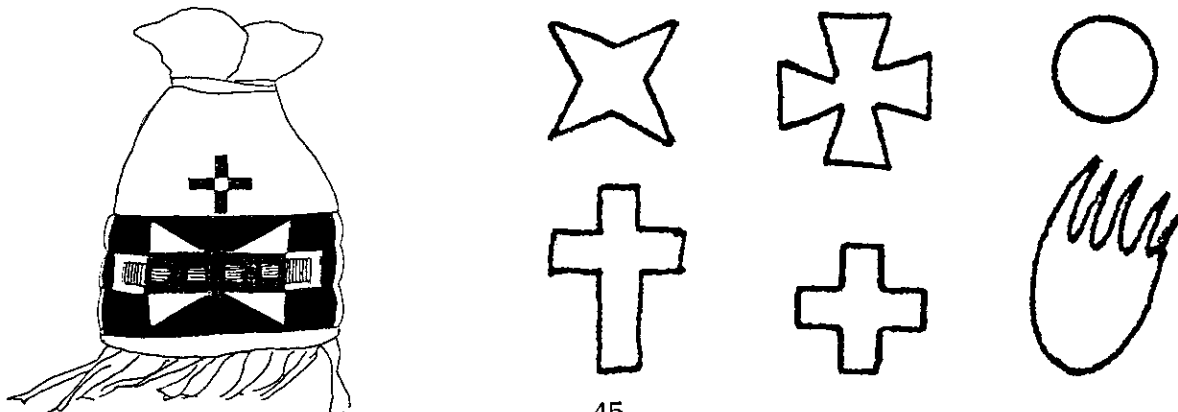
A paint pouch of tanned hide was a personal item, although some sacred bundles included a special pouch. Fringe extended from the base of the pouch. The designs were geometric, traditionally painted or worked with quills, but were quickly replaced with trade beads when they became available. Because Pawnee people endowed specific colors with meaning, paint pouch decoration often represented more than a beautiful design. In Pawnee culture the paint pouches would have been made by women.

Representational art work was the province of men whose purpose it was to communicate with sky powers in performing public ceremonial duties, hunting, or warfare. Their designs (on pipe stems, war shields, musical instruments, etc.) had to be easily recognizable to both their “audiences” (villagers, prey, or enemy) and the deities. Birds were messengers who conveyed information between the heaven and the earth, and they appeared frequently in the men's art work. Stars (four- and five-pointed) were another important Pawnee motif.

Each student will make a paint pouch in which to store markers, crayons, and paints for use during the week's activities. Ask students to create and color a geometric design on the lower half of each side of the paper bag. The two decorated sides of a Pawnee paint pouch were not matching designs. Paper punch around the base of the bag to form holes in which to tie the string or yarn for fringe. Typically six fringes were used. Secure the contents with string or yarn tied around the top.

NOTE: Red, yellow, green, blue, black, and white were the most frequently used colors. If you decide to assign groups now for next week's Associations activity, this may guide students in featuring the colors associated with their directions.

Older students could experiment on graph paper with geometric designs, incorporating the formalized Pawnee decorative motifs shown below.





**Day Four Social Structures**

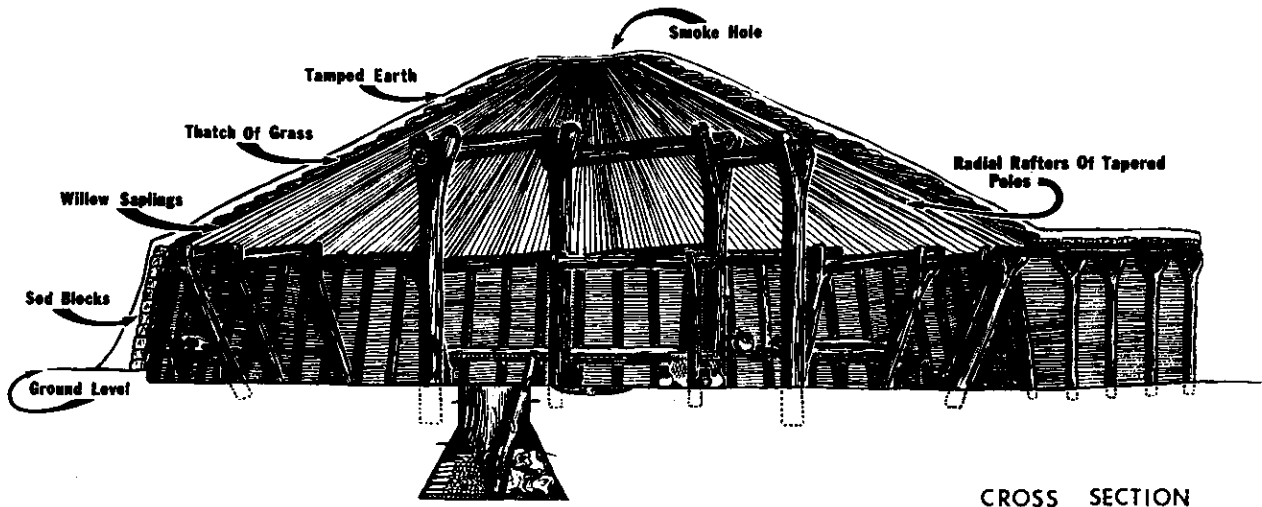
1. Describe an earthlodge interior.
2. List some elements of Pawnee social, political, and religious structures.
3. Draw a familiar object to scale.
4. Associate "natural elements" with weather. Relate cultural information to the prairie environment.
5. Describe some Central Plains Tradition tools and identify the natural materials from which they were made.

<p><b>Use:</b> Earthlodge</p> <p>Pawnee Worksheet Associations Studying the Past Bookmark #4</p>	<p>Day Four (Interior) and Poster Picture #4 (Earthlodge Interior, Detail of Sacred Bundle and Altar)</p> <p>Day Four Modern House/Earthlodge Day Four (Natural Elements) Day Four (Artifacts) Pawnee Earthlodge <i>Sacred Bundle and Altar</i></p>
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**Day Five Celebrate**

1. Summarize the Pawnee earthlodge building processes.
2. Identify natural resources used in building and other activities in Pawnee culture.
3. Integrate Associations information.
4. Accept individual responsibility for stewardship of the state's archeological heritage.
5. State why archeological sites and artifacts are non-renewable resources.

<b>Use:</b> Poster picture on page 39
Associations Day Five (Celebrate the Stars)
Bookmark #4 Stand Guard!

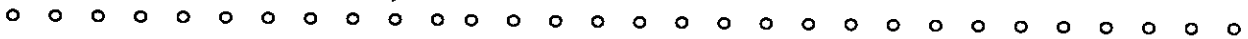


CROSS SECTION

## EARTHLODGE

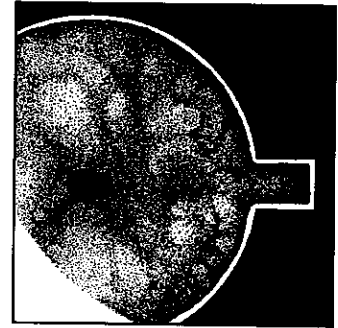


"The house was a microcosm of the universe and as one was at home inside, one was also at home in the outside world. For the dome of the sky was the high-arching roof of the universe and the horizon all around was the circular wall of the cosmic house. Through the roof of the house the star gods poured down their strength from their appropriate directions in a constant stream. In the west was the Evening Star, a beautiful woman Goddess of Night and Germination, and in her garden the corn and buffalo were constantly being renewed so that the people could eat; and in the western part of the house the sacred buffalo skull and the bundle with its ears of corn symbolized this power. In the eastern sky was the Morning Star—god of light, of fire, and of war. As he rose every morning he sent his beam into the long entryway of the house and lit the fire in an act of cosmic procreation, symbolizing his first union with the Evening Star in the times of the great creation when he had had to fight off the guardians of night with which the Evening Star surrounded herself. Finally the conflict was won and Morning Star mated with Evening Star and fathered the girl that was the first human being to be placed on earth" (Weltfish 1965:63-64).



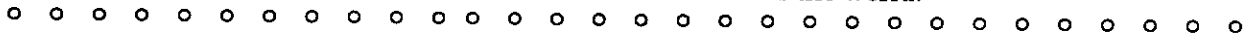
### Day One Earthlodge—Earth

Rising from the prairie floor like small hills, Pawnee earthlodges represented a building tradition at least 1,000 years old. A house covered with earth makes good sense in a land where seasonal changes in weather range from very hot in summer to very cold in winter. Soil was a plentiful, available natural resource. When applied to a dome-shaped roof, it would shed moisture, as well as provide insulation against heat and cold. Two feet thick at the base and about nine inches thick near the smokehole, the earth covering weighed at least ten tons!



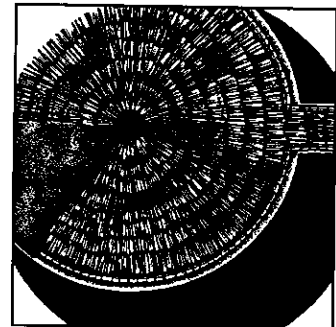
Circular in floor plan, earthlodges ranged in size from 20 to 50 feet in diameter. After marking out the circle with a center stake and rawhide cordage, the grass and dirt were removed from the area to a depth of 2 to 4 feet. This dirt was set aside for use during the last stage of construction. Each spring grass sprouted from the earth covering, making the lodge seem part of the natural landscape.

An extended, covered entryway, which ramped from ground level down to the floor of the lodge, was about 6 feet wide and could be used to stable horses during harsh weather. This doorway was oriented eastward toward the rising of Morning Star, an important Pawnee deity. Smoke rose from the hearth, located in the floor at the center of the house, upward to the sky through a hole at the top of the roof. *Tirawa*, the Sun, traveled across the sky each day, sending light through the smokehole as assurance that all was well in the world.



### Day Two Earthlodge—Grass

Beneath the covering of earth was a thick layer of grass, another prairie product in good supply. Any of the prairie bunch grasses, such as the bluestems or cordgrass, could be cured to use as an insulating layer and to help shed moisture. Women harvested the grass in late summer, using their sharp bone hoes. Bundles of the cured grass were placed vertically, like shingles, and tied to the wooden frame with strips of rawhide, saved for this purpose during the previous bison hunt. Before the covering of earth was applied, a Pawnee earthlodge looked much like a large grass house, similar to the building tradition of the Wichita people.



Sod blocks formed the base and lower wall. Stacked like bricks, they insulated and gave strength to the structure. Years later American pioneers would use the prairie sod as building blocks in a similar fashion.

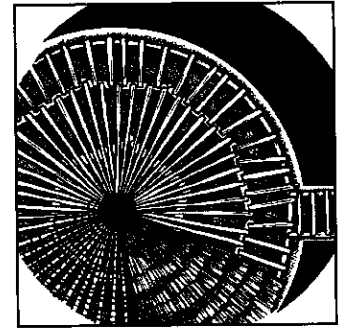
Grass also played an important role in finishing the floor inside the lodge. To create a smooth, hard surface, the dirt floor was flooded with water. A layer of grass over the water was set afire. This process was repeated until the desired finish was achieved. The hard finish reduced housekeeping chores for the women of the lodge, who shared many duties through an alternating system of responsibilities.

The Pawnee belief system was built on a rhythmic logic that balanced the universe. Alternating pairs (such as Morning Star/Evening Star, winter/summer, day/night) and "double pairs" (such as North and South/East and West and the four semicardinal directions) shaped the people's perceptions of the world. In the earthlodge a pair of related families, one on the north and the other on the south side, alternated in cooking, cleaning, leading local hunts, and other activities. North and South shared the hearth at the center of the lodge. This careful arrangement promoted order and harmony among the 30 to 50 people who lived together.



### Day Three Earthlodge—Wood

Building a Pawnee earthlodge required cooperation and at least two years of preparation. Extra rawhide from a bison hunt would be needed, as well as extra food for all the volunteers. Wood took time to season; grass had to cure. House builders used tools of stone and bone to dig, chop, smooth, cut, and shape natural materials into the tons of material required for construction. A new house called on kinship ties, past favors for neighbors, and a sense of good will in the community to accomplish the undertaking.



Men located and felled large trees (usually cottonwood) for the center posts and outer support posts. Women stripped off the bark to discourage burrowing insects. Many smaller trees were needed to form the base for the massive framework. Two willow hoops, one outside and one inside at the top near the smokehole, were essential architectural elements to give strength and shape to the roof. These were tied with tough elm bark, which would dry hard and tight.

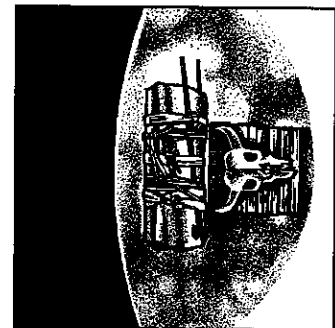
Construction made heavy demands on the surrounding environment. Building and maintaining a village of 30 to 40 earthlodges required huge amounts of wood. Supplying firewood for 40 hearths in an established settlement made wood-getting a top priority. Gathering kindling and portable-sized wood was an everyday task for women and their children. Men helped transport larger firewood, a job made easier with the use of horses.

Melting snows and heavy rains could seep between the house coverings, weakening and eventually rotting some of the radial rafters, which had to be replaced regularly. With care an earthlodge would last about 15 years.



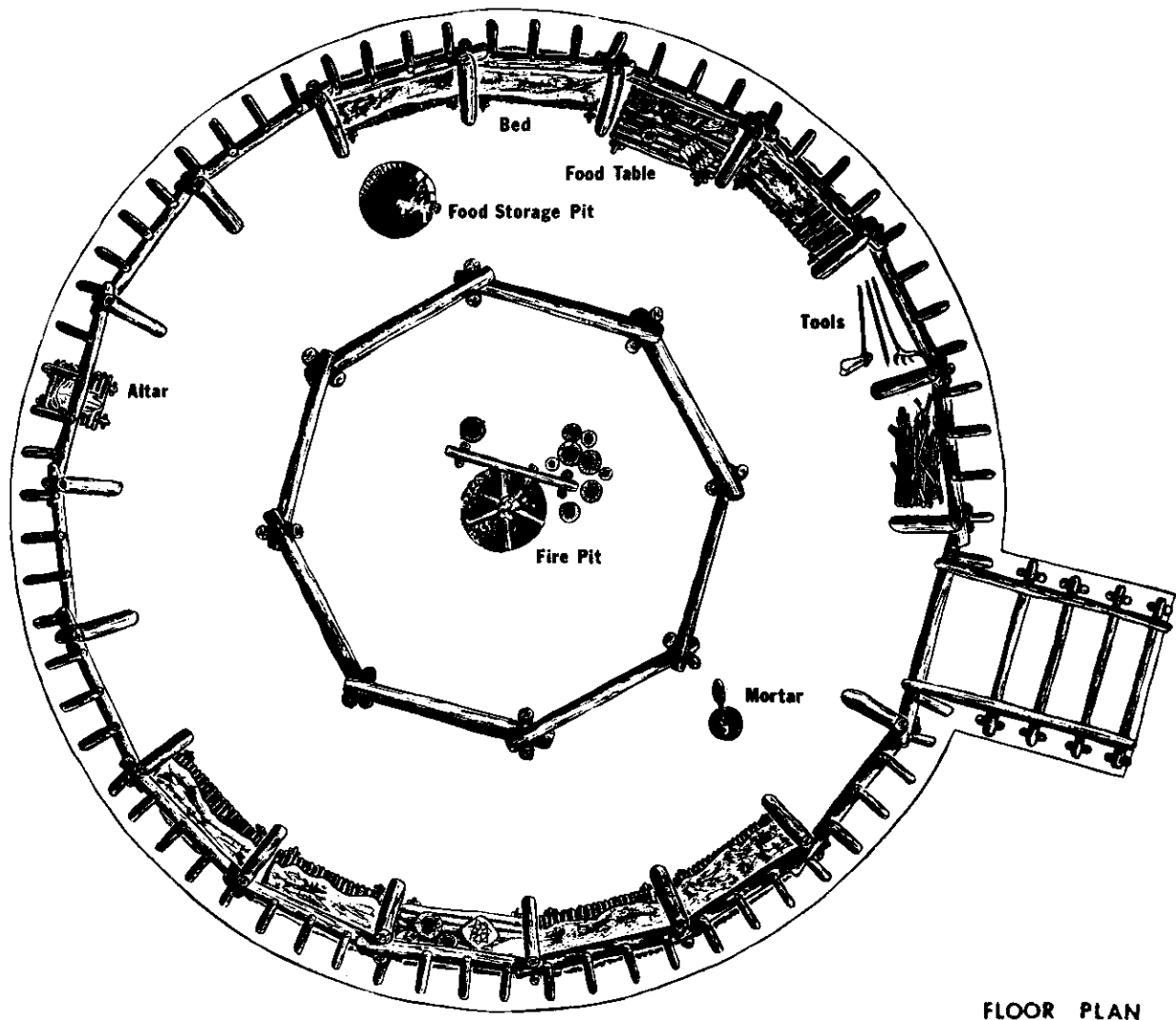
### Day Four Earthlodge—Interior

Just as the shape of the house reflected the larger universe, the interior of the earthlodge was its own world. Dependent on an economy of gardening and hunting, the people honored the corn and bison by devoting the west side of the house to them. Along the western interior wall, religious objects blessed the household and carried with them ceremonial obligations. An altar, built either as a wooden frame or raised earth, formed the platform for a distinctively painted bison skull. Above the altar hung a sacred bundle. This long bag of dressed leather contained holy objects. A pair of specially grown ears of corn, sewn into casings, received



acknowledgment at every meal. Seeds, animal skins, pipes, hoes, pigments, feathers—the various bundles contained symbolic items associated with specific activities or representative of desirable attributes, such as wisdom and bravery.

Each bundle was sacred because of its actual contents and as a collection of visible prayers, sent heavenward through ceremonies. Communication between the earth, home of the people, and the sky, home of the gods, involved cycles of song, dance, and ritual. Heavenly messages to the people could be delivered by birds, animals, or natural elements. Clouds, Winds, Lightnings, and Thunders were the four messengers of Evening Star, a central figure in Pawnee religion. Her western home in the sky was the eternal garden; she had the power to make the earth green and fertile each spring.



## PAWNEE



### Day One

As early as A.D. 1000, the ancestors of the Pawnee had arrived and adapted to prairie life in the place we now call Kansas. While with the Quivirans (ancestral Wichita) in A.D. 1541, Coronado requested a visit from people of "Harahey" to the north, the "Pahani" or "Pani." By the late 1600s, when French and other explorers met the Pawnee, the earthlodge building tradition was already centuries old. Each of the tribe's four bands built their gardening villages along the drainages of the Republican River (north-central Kansas) and the Platte and Loup rivers (south-central Nebraska). Southernmost of the bands was the *Kitkehahki*, called the Republican Band by explorers. Numbering about 2,000 in A.D. 1777, the *Kitkehahki* lived in extended family earthlodge villages. Their lifeway depended upon the plants and animals of their prairie environment.

Movement of the stars above and seasons of the earth below guided the village through cycles of work and ceremony. A complex belief system, attuned to celestial rhythms, defined the times for hunting and for gardening. In the river valleys below the villages, Pawnee gardeners grew pumpkins, squash, beans, watermelon, and corn. Sunflowers made tall boundaries between the vegetable fields.

Leaving their villages and gardens in June, the people traveled west onto the plains to hunt bison. While hunting, they lived in temporary camps, sheltered in hide houses called tipis. They returned to the villages in early autumn to harvest and process the crops. Another bison hunt in winter brought the cycle to a close. In spring, ceremonies to awaken the universe signaled the beginning of another season of renewal and growth.

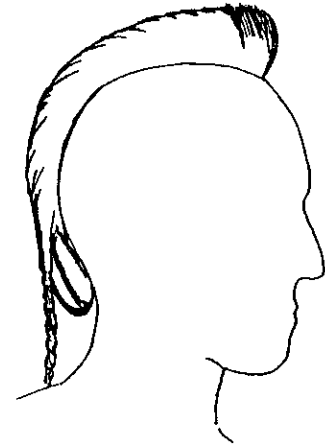
**Four Bands.** Republican (*Kitkehahki*), Grand, Tappage, and Skidi—these four semi-autonomous bands comprised the Pawnee tribe. The Republican Band, who lived in Kansas, is usually grouped with the Grand and Tappage Bands under the term "South Bands." The Skidi Band was closely associated with the South Bands, but also with the more northerly Arikara. Scientists consider both the Arikara and the Wichita (south-central Kansas) as groups related to the Pawnee, who were at one time part of the migration from the south that brought ancestors of all three to the Central Plains. The four bands each spoke a slightly different dialect of a common language, which is part of the Caddoan linguistic family. The Wichita people are also a part of this language group.

**Population.** Estimated in A.D. 1700 at about 10,000, the Pawnee were one of the largest native groups in the Central Plains. The effects of the nineteenth century, however, decimated the population. Smallpox and other epidemics killed thousands of people. Location of Pawnee lands along the increasingly traveled overland trails compounded problems. Added to these difficulties was increased pressure from Sioux, Cheyenne, and other Plains tribes, who raided the Pawnee frequently, taking a heavy toll in lives and in corn. The South Bands eventually drew together with the Skidi through an agreement with the United States Government into large villages near Genoa, Nebraska, for mutual protection in 1859. In that year the population was 3,400. By 1879, three years after removal to Indian Territory (Oklahoma), the total was 1,440. By 1910 the population was 633. Today the population is increasing once again. More Pawnee live in and near the town of Pawnee, Oklahoma, than anywhere else.

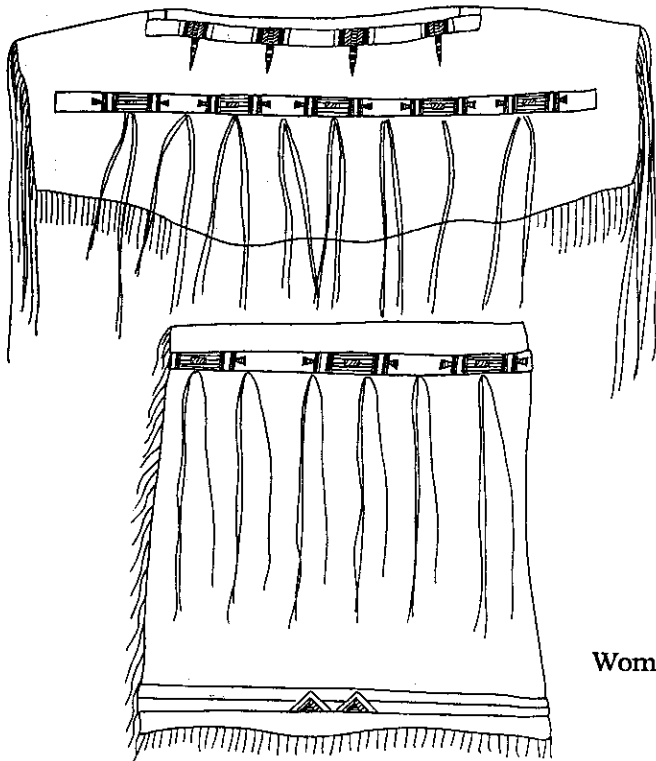
**Villages.** Pawnee earthlodge villages were home to 1,000 to 2,000 people. In A.D. 1700 there were 18 settlements. The Pawnee usually built on the bluffs or ridges associated with streams and rivers near the rich bottom land required to grow their vegetable crops. Growing, harvesting, and processing these vegetables represented much of a village's activity. Here, too, ceremonies were held in regular cycles of dances, feasts, and other events (some public and some restricted for special audiences). Local hunts for fresh meat, manufacture and repair of equipment, tools, clothing, etc. were also part of village life, along with games and contests.

**Clothing.** Women made all the clothing, using tanned animal skins and various ornaments, such as porcupine quills or beads. Pawnee clothing was well suited to the environment. Before European influence the people wore very little during warm weather. A man wore a loin cloth and moccasins and usually a pair of leggings. His ears might be pierced, and the usual Pawnee hairstyle for men was distinctive, with all the hair except a topknot removed. The remaining hair was stiffened with pigment and was sometimes augmented with a "roach" of horse hair.

A woman wore a skirt, generally of buckskin or young buffalo hide, tanned on both sides, wound around the waist and reaching below the knees. Her loose shirt was also of leather. Leggings and moccasins completed her attire. Her hair hung in two braids. In cold weather warm bison robes were worn by both men and women.



Pawnee man's hair style.



Woman's dress.

Once they left toddlerhood, children wore clothing similar to that of adults. Weltfish's Skidi informant told of winter robes for children made from bison calfskins, with the heads and budding horns left on and used over the children's heads as hoods.

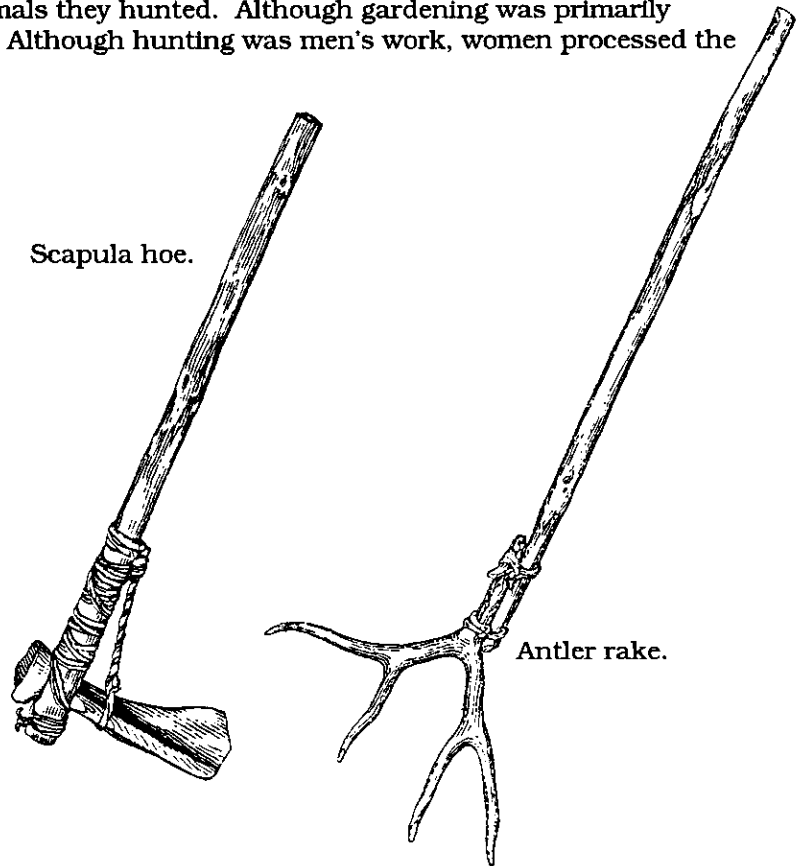
Moccasins of two types were essential: a soft moccasin, worn "around the house," and a harder type necessary for work and hunting. Repair of moccasins was a regular duty of the women, and pieces of tanned hide were kept for this purpose. Enough leather for a pair of moccasins was a common form of payment from one woman to another after a cooperative project, such as house repair or sewing help. A raiding expedition or a hunting party might require an extra pair of shoes for each person. The extra pair could be filled with packs of food prepared for use on the trail.



## Day Two

**Balance.** Pawnee life balanced itself carefully. There was a time for planting and a time for hunting. The group's work was preceded by its ceremonies. Heaven's blessing brought Earth's bounty, assured through rituals that called upon sky powers to transmit their magic down to the land. With all in order, women fed the people with the produce of their gardens. With all in order, men fed the people with the animals they hunted. Although gardening was primarily women's work, men helped at harvest. Although hunting was men's work, women processed the meat and hides (the "harvest").

**Gardening.** When the new moon appeared after the Spring Awakening ceremony, it was time to plant. Seed corn, saved from last year's crop, plus bean, squash, and pumpkin seeds, were sorted. Gardening tools, made of wood, bone, and antler, were readied. A woman's hoe, made from the scapula (shoulder blade) of a bison attached to a wooden handle with sinew, was so effective and so central to Pawnee horticultural tradition that even after iron hoes were introduced, the scapula hoes were common right up to 1876, when the people left for Indian Territory. A woman also used a sharp digging stick, whose tip of fire-hardened bone was attached to a wooden handle. The digging stick was used to loosen the soil. With her deer antler rake she cleared leaves and other debris from the field.



Size of the family-owned plots varied from  $\frac{1}{2}$  to 3 acres. Senior wives, grandmothers, new wives, teenage girls, and children trekked to the gardens to grow food for the families. Located on the flood plain, the gardens might be a mile or more from the village. Prairie sod is very hard to cultivate, especially without metal plows. The looser, fertile soil of the bottom land was the best place to grow crops. In addition the lower ground offered more moisture and some protection from the searing winds of summer. The gardeners were usually guarded by young men, who volunteered to assure their safety, for Plains Indians sometimes attacked work parties while they were away from the security of the village.

The cropland was the partner of the hunting land. And all around and in between were native plants gathered for use as food, medicines, and seasonings. The streams and rivers supplied fish and mussels. Bone fishhooks recovered from sites are evidence of fishing activity. Bones and shells indicate that the Pawnee were eating channel catfish and bullheads, as well as snapping turtles and land terrapins. The shifting sands characteristic of the Republican River would not be hospitable to mussels, which were taken instead from slower flowing tributaries.

**Corn.** The Pawnee raised flint, flour, and sweet corn. Corn was categorized by color because of the religious significance of corn and colors in Pawnee culture. The gardeners maintained pure strains by isolating each kind to avoid cross pollination. Strips of sunflowers separated the strains. The oil-rich sunflower seeds were part of the harvest, and the stalks could be used as fuel in various corn-drying processes.

In the 1860s the Pawnee were cultivating 10 varieties of corn. Flint corn is high in gluten; nearly all of the kernel is composed of horny starch. Flour corn, however, is almost all soft starch. Sweet corn has a high sugar content. Pawnee women knew the properties of each type and preserved and prepared the corn accordingly. Some, of course, was boiled and eaten right away. Some kinds were removed from the cob and dried. Other types were left to dry on the cob. Below is a listing of the varieties of corn being grown in 1867 (Weltfish 1965:122).

Blue corn	<i>uraax-katit</i>	"earth-black," referring to very dark blue
Spotted corn	<i>rikis-tipiku</i>	"corn-spotted" ( <i>ripiku</i> , egg)
White corn	<i>rikis-taka</i>	"corn-white" with big kernels
White corn with small kernels	<i>rikis-paruk-sti</i>	"corn-holy," white with small kernels
Yellow corn, hard variety	<i>rikis-taxkata</i>	"corn-yellow"
Yellow corn, soft variety	<i>parus-arut</i>	"rabbit-soft"
Hard corn with different colors	<i>kitsirit</i>	flinty, hard, translucent, smooth with different colored kernels on the same cob—white, spotted, yellow
Red corn	<i>rikis-pahat</i>	"corn-red"
Sweet corn	<i>rikis-karus</i>	"corn-sweet," somewhat reddish yellow and sticky
Osage corn	<i>rikis-pasasi</i>	"corn-Osage," gotten from Osage Indians, grows 9 to 10 feet high and can have 8 or 9 ears on one stalk

The classification of the corn varieties into black, yellow, white, and red corresponds to the colors associated with the semicardinal directions. See Associations activity for Day One (Directions and Colors) on page 65.

**Holy Corn.** The *rikis-paruk-sti* was used only in sacred ways. Called Holy or Wonderful Corn, its ears were carefully preserved each year and kept in the sacred bundles. This variety of corn was never eaten; it played the central role in a spring ceremony held in late April. The holy corn seed had been planted, and when there were four "good" (real) leaves on each plant, the priests ritually transformed the corn from infant to mature Mother Corn.

**Other Vegetables.** In the 1860s the Pawnee were growing seven common varieties of squash and pumpkin and eight varieties of beans. No religious connotations were attached to any of these vegetables, although their names were descriptive.

**Planting and Hoeing.** Corn seed was planted in groups, with the cleared earth mounded up and firmly packed over the seed. Bean seed was also planted in these hills, so the bean vines could cling to the cornstalks for support. Crops were cultivated twice, with the final hoeing in early June just before the summer bison hunt. Ceremonially, women participated in the *Awaru*, the walking around ritual. This was a spring ceremony just before planting the corn; the Holy Corn was already growing. Not another seed went in the ground, though, until the hoeing dance was held. The early June cultivating left the small corn plants growing atop their hills, which to the Pawnee looked like little earthlodges with green "smoke" (the corn plants) rising from the "smokeholes."

**Harvest, Processing, Storage, and Use of Vegetables.** Corn, the staple crop, was prepared for eating in several ways. It could be eaten immediately after harvest by roasting or boiling. It could be boiled, broiled, or roasted "green" or removed from the cob and dried as individual kernels. Corn left on the cob was braided by the husks. Shelled dried corn was used in meat and corn soups or ground into cornmeal for bread or corn mush. Shelled corn was placed in hide bags and stored for future consumption.

Cornmeal was an important staple. Oblong loaves of bread, made from the corn flour, were baked under the ashes of a fire. The women used a wooden mortar for grinding corn. It was made out of a tree trunk about 1½ feet in diameter and 4 feet in length. A pestle with a heavy end was used to pound the corn into meal.

Squash and pumpkin were cut into long strips and hung to dry. After drying for a day or two, the strips were taken down and pounded flat with a wooden mallet. The strips were then woven into mats, folded, and stored for later use. Pieces of the mat were torn off as needed to flavor soups and other dishes. Although the Wichita tribe made and traded these mats with neighboring tribes, the Pawnee had only limited trade with other tribes because so many of them were enemies. Since there were great similarities between Pawnee and Wichita cultures, trade in like items was probably very limited.

The Pawnee stored their dried vegetables in tanned leather bags of various sizes. The different kinds of corn were kept in separate bags. These were then placed in underground storage pits, located both inside and outside of the earthlodges. The bell-shaped pits or caches were dug and prepared by the women. Pits varied in size from 6 to 8 feet deep and from 6 to 8 feet in diameter at the bottom. Wooden ladders were used to enter and exit the pits, which were usually lined with grass or bark to keep them dry. Pits were covered over and concealed so enemies could not raid the food supply. After the pits could no longer serve as storage areas for food, due to water leakage or other reasons, they became trash receptacles. A house occupied for a long time boasted several pits.

**Meals and Planning.** With the north and south sides of the earthlodge alternating responsibility for the usual two meals each day, a woman and female relatives from "her" side served from 30 to 50 people. The vegetables, fruits, breads, and meats required for such a crowd meant careful planning. Cache pits were opened as seldom as possible to protect their contents, so the household's needs had to be figured and large sacks retrieved from storage in an orderly way. Because both north and south kept their stored goods in the same pit, cooperation between the two senior wives was necessary. In a Pawnee household the close association of the north and south sides was based on a mutual understanding. If, for example, the women of the north side were very busy on a project, the south side, without being told or asked, might cook both meals on that day. Food was cooked at the shared central hearth.

o o

### Day Three

Men fed the people, too. The bison hunts, on foot until the mid-1600s when the Pawnee acquired horses, were the men's specialty. The making of bows, the care of the horses, target practice for hunting and war, the elaborate planning sessions for the season's hunt, and the heavy responsibilities of providing tons of meat for the survival of the village were duties of the men. Women processed the bison kills, working hides and drying meat.

**Bison hunts.** Extended hunts twice a year took the majority of villagers west onto the plains. About six months of each year were spent on these hunts, during which time the Pawnee lived as Plains Indians, moving from camp to camp. Feeding a village of 1,000 people demanded a supply of meat in both fresh and dried forms. Since the two bison hunts comprised at least half the year, a considerable amount of meat was eaten fresh. Estimating from 1½ to 2 pounds of meat per day per person, which averages all ages and all levels of activity and growth, a ton of meat would be required daily for 1,000 people. If a 1,000-pound bison cow when butchered produced 450 pounds of fresh meat (no bone, but including organs), it would take more than four bison per day for this village. The drying process causes a shrinkage of 35 to 50 percent, depending on several conditions; therefore, 450 pounds of fresh meat would yield less than 225 pounds of dried meat. This dried meat was essential for the nutritional needs of the people, and it was a central part of ceremonies as well. The dried meat was often rehydrated in soup or stew. The efficiency of drying meat made the transportation of so much weight effective.

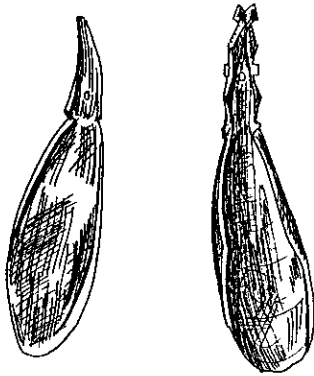
**Hunting, Processing, and Preparing Meat.** After the harvest, when the vegetables had been dried and stored, the village prepared for the winter hunt. The Pawnee packed supplies, left their earthlodge villages, and changed to a Plains nomad lifestyle. Although the men hunted locally

year round, life from December through February and again from June through August focused on bison hunting and the processing of the meat.

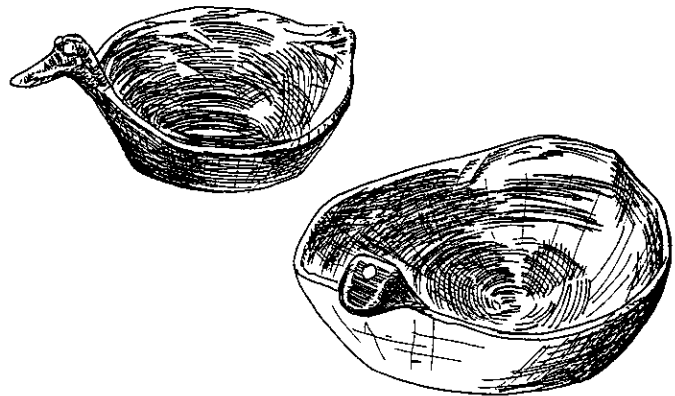
Because bison migrated, the people needed to preserve and store meat for times when buffalo were out of range. Plains Indian groups that hunted large game developed a nearly perfect way of processing meat. On the hunt the women, working in groups, skinned the bison killed by the men and carried the meat and hides back to camp for processing. The meat was cut with sharp flint or bone knives into thin slices, which were hung separately to dry in the sun. Meat was cut so thin that it took only a couple of days to dry and harden. The Indian method of butchering followed the natural contours and muscle layers of the animal. They did not cut cross-grain or saw through bones. Sun-dried meat (called jerky) was made from almost any piece of meat.

Some of the meat was cut into thin sheets, which were dried and folded into rectangles. A sheet of fat was placed between each layer of meat. Bison meat was eaten fresh or dried. Nourishing travel food (called pemmican) was made by pounding dried meat until it was fluffy, then mixing it with fat and dried pounded fruit. Dried bison meat was essential as part of ceremonial feasts, so certain kills were dedicated to this purpose. Nearly every part of the bison was used in some way. In addition to the meat, Plains Indians used bones, horns, sinew, internal organ, and hooves.

Food such as soup was eaten with spoons made from bison horn. Each person had one of these scoop-like utensils. Ladles were also made from horn. Each family had wooden bowls for everyone, plus some extras for guests.

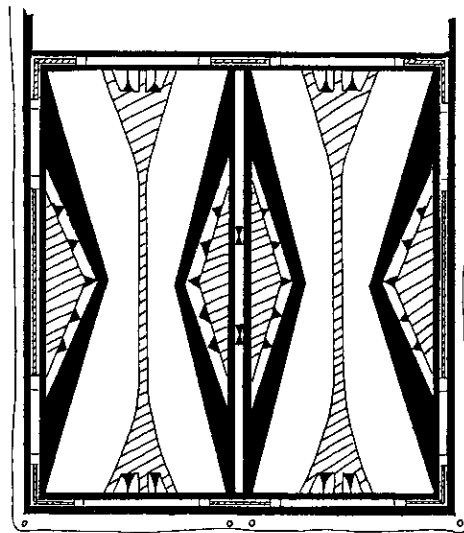
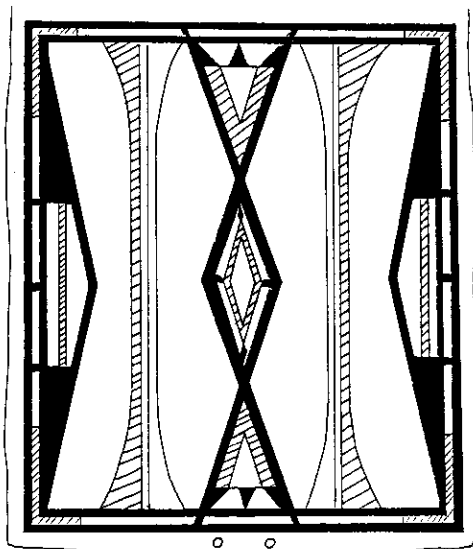


Horn spoons.



Wooden bowls.

**Parfleche.** Parfleche is a French term, "for meat," for the rectangular or square rawhide storage containers made by many Plains Indians. They were usually decorated with beautiful painted



geometric designs. Women used bone brushes and natural pigments and dyes to paint the containers, which were storage boxes for dried meat. A large parfleche could hold 80 pounds of dried meat. These containers could also be used as suitcases for personal belongings or household items. To make a paper parfleche, follow the instructions on pages 26-27 of Unit One.

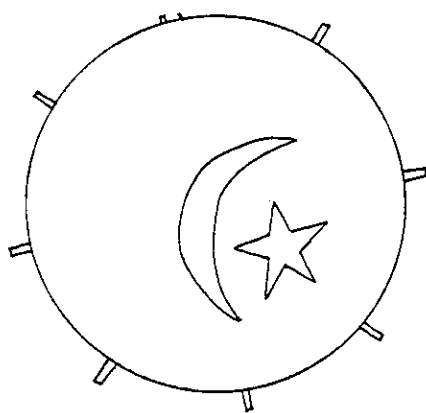
**Firearms/Bow and Arrows.** French traders supplied guns to the Pawnee in the early 1600s. “Although the Pawnee hunted elk and deer with firearms, they continued to use bows and arrows to hunt bison. Traditional weapons were efficient and more easily loaded than single-shot firearms” (Reynolds, personal communication). Only certain men made the arrows, although the other weapons could be made by individuals or the work could be “hired.”

**Tipi.** During the summer and winter the Pawnee left their gardens and villages to live as Plains Indian nomads. They moved from camp to camp, hunting bison on the plains and processing the meat and other products that were essential parts of their survival. While hunting, the people lived in skin tents called tipis. A tipi was ideal for the hunt: lightweight, warm, and portable. It could withstand the wind and winter storms of the plains. It could be erected or dismantled quickly.

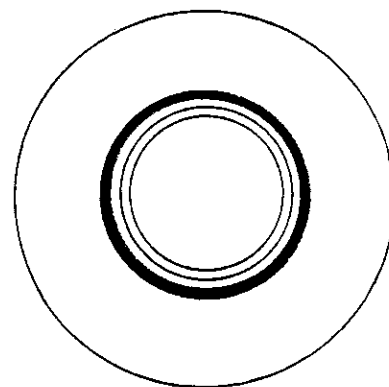
A tipi was two years in the planning, as it required four winter bison hides and four summer hides. Two hides per season for four hunts had to be set aside for this purpose. Sewing the hides together required the sinew of eight bison. Specific women made the tipis, and this cost had to be planned for as well. A winter tipi had 13 poles for the frame. In summer, saplings of elm or willow as the supporting frame were arranged differently for a more open tent. To make a tipi model, follow the instructions on pages 20-21 of Unit One.

**War.** The Pawnee were long-standing enemies of the Osage, Kaw, and other tribes in the area. Their enemies knew that the Pawnee often attacked under cover of storms. Stealing horses became a prime motivator after 1600. Known to other tribes as fierce fighters and stealthy (and therefore successful) stealers of horses, the Pawnee took pride in bravery and booty. In their dealings with the Spanish, the Pawnee were less than hospitable, but the opposite was true for their relations with the French traders and later with the United States Government. Some Pawnee men served as United States Army scouts and earned reputations as keen trackers and brave soldiers. Warriors comprised a respected stratum of Pawnee social structure, responsible for the defense of the villagers at home or on the hunt. Not every man was interested in being a warrior, although most young men went out with a group of age-mates to do some raiding. Warrior societies had specific ceremonial and symbolic affiliations and were an important part of most men’s social lives. War drums were made by men and were decorated with symbols of celestial powers.

Single-headed tambourine drums (hand-held).



Blue background.



Black, red, and yellow (from outside to center).

## Day Four

**Social Organization.** An earthlodge's household was the basic unit of Pawnee society. Ties of kinship bound the village together, although there was definite stratification in the society. There were "the commoners" and an upper class, composed of the hereditary chiefs and a powerful priests. Membership in an animal cult was fluid. The only opportunity for upward movement in the society was as a doctor or warrior.

Hereditary chiefs used the sacred bundles, which were given to the people by the gods. Only the priests knew the necessary rituals and stories to activate the bundles. Sacred bundles served as a covenant between the gods and the people that the Pawnee would prosper.

**Marriage.** Each side of the lodge was subdivided into three "stations," based on age and personal maturity: young or new wives (northwest/southwest), mature senior women (central), and elderly women (northeast/southeast). Marriage to one woman usually implied a man would also take her younger sisters as wives as they became eligible. A son-in-law's duties in his wife's household required that he supply meat and the gains of warfare. Family negotiations and approval (gifts of horses, etc.) were believed necessary for a successful marriage. Serial marriage was not uncommon. A young woman needed the protection and superior hunting status of a mature man. A young man would need a more mature woman with property and experience. As they aged, the situation for each individual could reverse itself. There was no rule about this, and many marriages were long-lived. However, the arrangements were fluid. No matter what the eventual marital status of the parents, their children were provided for until adulthood.

**Grandmothers.** Elderly women, called "grandmothers" regardless of biological kinship, cared for the young children in a loving relationship. A grandmother shared her food bowl with her grandchild, made sure the child was warm, and emotionally served as a safe haven of comfort. She helped the senior wife, offering vegetables from her own garden and meat she had earned through helping on the hunt. She also worked hides, sewed, wove mats, and made other necessary household items and clothing. Her status in the household after a lifetime of service was assured.

**Political Organization.** Consensus was the ideal outcome when the ranking men gathered to decide important matters. The chiefs were in charge of some decisions, but only with the support of others. Warrior societies usually centered around a particular set of special knowledge in hunting or warfare. Heralds announced decisions to the villagers, who often gathered on the roofs of the earthlodges to hear the news. Power was associated with responsibility for the sacred bundles.

**Death and Burial.** The Pawnee usually chose the highest hills near each village for burying their dead. If the hills were more than a mile or so distant, interment was sometimes along the edges of ravines or stream banks closer to the village. The historic Pawnee practiced inhumation rather than ossuary, tree, or scaffold burial. Bodies were wrapped in matting or bark and generally placed in partially flexed positions, but there was no consistent orientation to the cardinal directions. Grave offerings accompanied burials, and then earth was mounded over the remains, making low hillocks. Where two or more bands occupied the same village, each had its own cemetery.

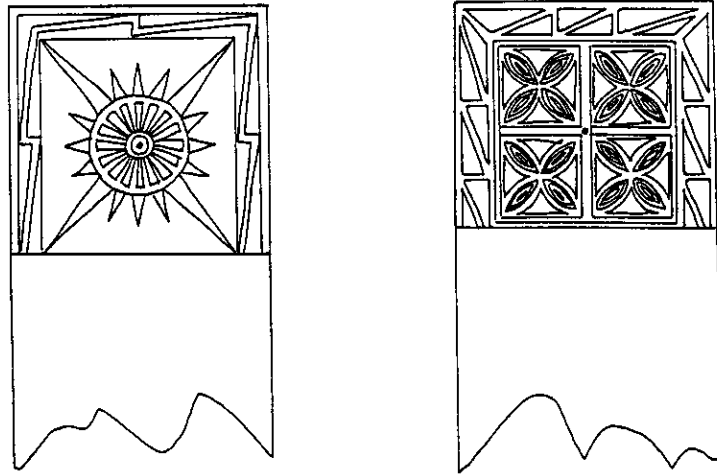
**Religion.** A pantheon of gods, who lived in the sky, communicated with the people and gave them the sacred bundles. The bundles served as the tie between celestial powers and the safety and prosperity of the people. Astronomically based, Pawnee beliefs have been categorized as a "star cult." The system was structured around the movement of celestial bodies. Ceremonies and dances were the rituals that called on the deities



for help in earthly pursuits or honored some aspect of Pawnee life. Religion shaped the structure of Pawnee social and political life through the power of the bundles and the accompanying ceremonies. Priests were a powerful group in Pawnee society; they knew how to invoke the powers of the sacred bundles for the good of the people. Drums and rattles were important parts of nearly every ceremony.

**Work Roles/Women.** The roles of men and women were clearly defined. Working in groups, women tended their gardens, prepared and preserved food, skinned animals, and tanned hides for clothing and tipis. Women assumed major responsibility in the upbringing of children. For the first months of life, a child was bound on a cradleboard, which served for both cradle and carrier. Children were kept close by the women while they worked. Mothers taught their daughters the duties of women. Well-tanned hides, well-preserved and well-prepared foods, productive fields, and an orderly household were signs of a properly reared woman.

Cradleboard designs



Women did a great deal of the work involved with building an earthlodge and with maintaining it over the years. A woman made wooden bowls, horn spoons, and ladles. She made gardening tools and provided vegetables and fruits, both grown and gathered. She butchered meat and preserved it in containers that she had made and decorated. She stored the food in a pit that she and her relatives dug and prepared. She transported water, gathered firewood, maintained the hearth to provide heat, light, and steady cooking temperatures. She tanned hides and constructed all the clothing and moccasins, the tipi cover, and horse equipment. She wove the mats upon which the family sat. Except for ceremonial, hunting, and war items, all the material culture of Pawnee society was the product of the women's work. Women made pottery, too, although some of the first items traded from the French were metal cooking pots. By 1856 only a few pottery makers were still shaping pots, and by 1867 everyone was using kettles, pots, and pans from traders. Pawnee women worked hard. Although not usually a part of the priestly class, and (except for one ceremony) not a central part of conducting the rituals, Pawnee women were the essential other half of life in a family, the village, the band, and the tribe. A woman could choose her own husband(s) and was a person of property. When her daughter married, the son-in-law came to live in her house. She conducted bartering business in her village neighborhood and, as a senior wife, had tremendous responsibility for the welfare of the household. A husband's status in the society was tied in many ways to his wife's abilities and position. From his head to his toes, he was a reflection of his wife's abilities as well as his own. A good woman was as central to Pawnee life as a good man.

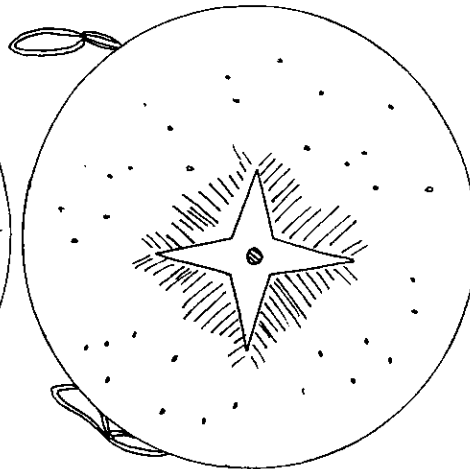
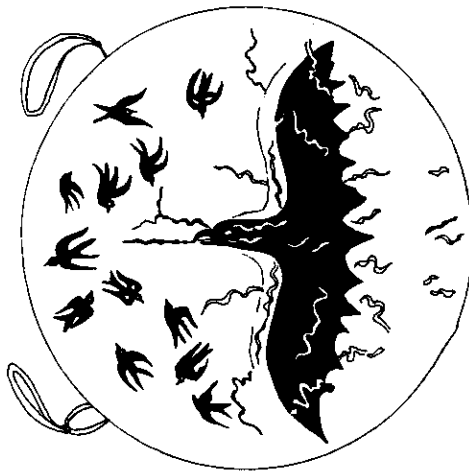
**Work Roles/Men.** The men also worked in groups. They hunted, made weapons, defended the villages, performed ceremonies and dances, conducted village business, and played games to develop skills needed for war and hunting. Men assumed responsibility for training boys when they were old enough to learn the duties of men. Boys learned the skills to become hunters and

warriors. They were taught to be brave, truthful, and generous. A man was expected to control his emotions, especially anger.

Visitors to Pawnee villages noted that the men seemed to sit around with their friends while the women worked. Although it is true that Pawnee women worked very hard and had a great deal of physical labor to perform every day, the men in this society conducted business with their peers, planned hunts and raiding parties, negotiated difficulties among neighbors, and kept the religious balance of the village. These activities were of vital concern to every member of the group and were viewed as an essential contribution to its welfare. Men were usually members of a warrior society, which brought its own set of responsibilities. Men were responsible for locating and removing large trees for the construction of lodges or for firewood, monitoring the safety of the village, planning and participating in raiding parties for horses and other booty, making weapons (only special craftsmen made the arrows, though), making drums, rattles, and pipes, hunting locally and seasonally, practicing archery and other skills, and caring for the horses. A man's responsibility to provide meat and protection was central to the organization of the society, and a household could not survive without his contributions.

Eagle, swallows, and magpies, messengers of the gods.

Dark green background with central red dot, light green rays, and little white "stars."



Large double-headed drum.

Gourd rattle, decorated with the semicardinal colors and four stars.

**Recreation.** The Pawnee had a range of amusements. They enjoyed guessing games, swimming, racing and other athletic games (that also prepared young men for hunts and war), games of chance, and games of dexterity, sometimes accompanied by bets about which person or team would win. The outdoor games were fast and required physical endurance and skill.

The children played games and had toys. The girls had dolls and little tipis. They imitated their mother's work, preparing them for adulthood. The games and pastimes of the boys also prepared them for adult roles. Bows and arrows, shields, and spears were some of their playthings. Toys made from bone and wood resembled bison and other animals, including horses. Boys played a game of hoop and stick, which developed their accuracy with spears and bows and arrows. A hoop made of ash wood was rolled along the ground, and the players took aim. Men played a variation of this hoop game for recreation and to hone their hunting and fighting skills.

Women enjoyed the plum pit game, played with marked plum pits, tossed in a specially made coiled basket. Gambling usually accompanied this pastime, and only a certain amount of time and goods were appropriate for a responsible well-bred women to devote to the game.



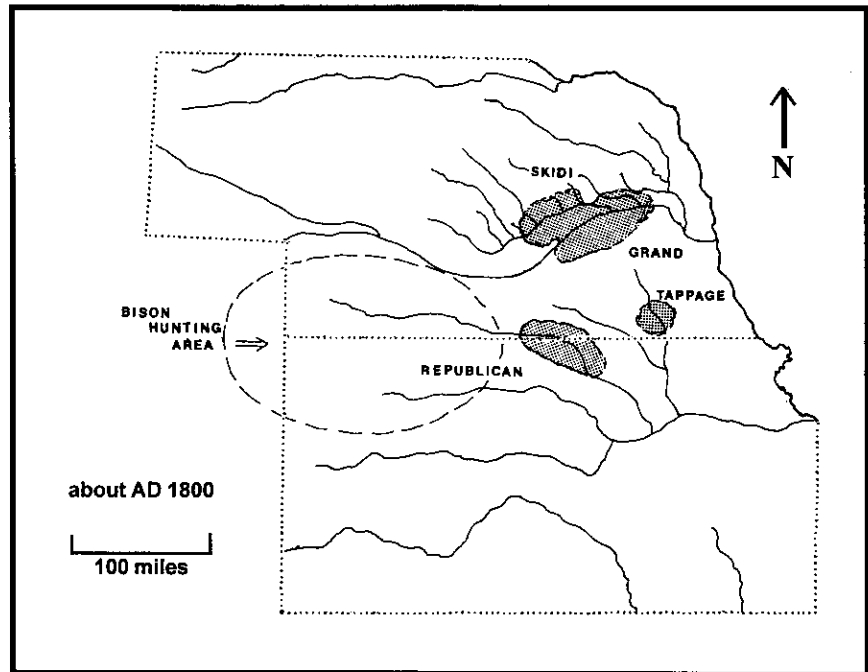
## WORKSHEETS



Worksheets and the suggestions that follow are designed to integrate this unit of study with basic elementary and middle school subjects. We hope teachers will expand upon these ideas and find new ways to use the worksheets for all subjects. Worksheets may be enlarged for classroom use at 240%.

### Day One Worksheet: Pawnee Bands/Kansas-Nebraska Map (Social Studies)

This worksheet can be used to build map reading skills. Discuss scale, directions, date, etc. The shaded areas indicate the locations of the four Pawnee bands in A.D. 1800. Help students understand that under increasing attacks by the Sioux and other Plains tribes, the bands moved closer together for protection. These raids, plus overland trail traffic and pressure from white settlers, eventually led to a move to one area, near Genoa, Nebraska. (Ask students to locate Genoa on a modern map.) Finally the Pawnee moved to a reservation in Indian Territory in present-day Oklahoma. Discuss the adaptations, benefits, and



difficulties one might expect the band members experienced through these migrations. What would change on the map over time? Ask students to identify the rivers shown here. River names are provided on a map on page 82. The *Kūkehahki* Band was named the Republican Band by white explorers, who misunderstood their form of government. The Republican River takes its name from the Republican Band of the Pawnee. Talk about the importance of waterways in settlement location.

Students could map the classroom, basketball court, etc. for map-making practice. Can they identify any “understood” boundaries in or around the building (for example, the teachers’ lounge, schoolyard boundary, etc.)?

Place names of modern towns sometimes reflect a specific aspect of the landscape, such as an unusual geological formation, or represent a desired quality of life or the name of a powerful person or group in the settlement or commemorate an event. Place names are also chosen as a connection with a previous place. After naming some cities, towns, or neighborhoods in your local area that reflect some of these origins, students might use what they have learned about Pawnee beliefs and traditions by thinking of names that could show some important aspects of Pawnee culture.

Using the scale, how far did an eastern Republican Band group have to travel to get to the bison hunting area? How far is your school from the northern (eastern, southern, western) border of Kansas?

Discuss natural and artificial boundaries. “Kansas” and “Nebraska” did not exist as states in 1800, so the dotted lines shown here would have had no meaning to the Pawnee. Point out the northeastern border of Kansas as an example of a natural boundary that coincides with an

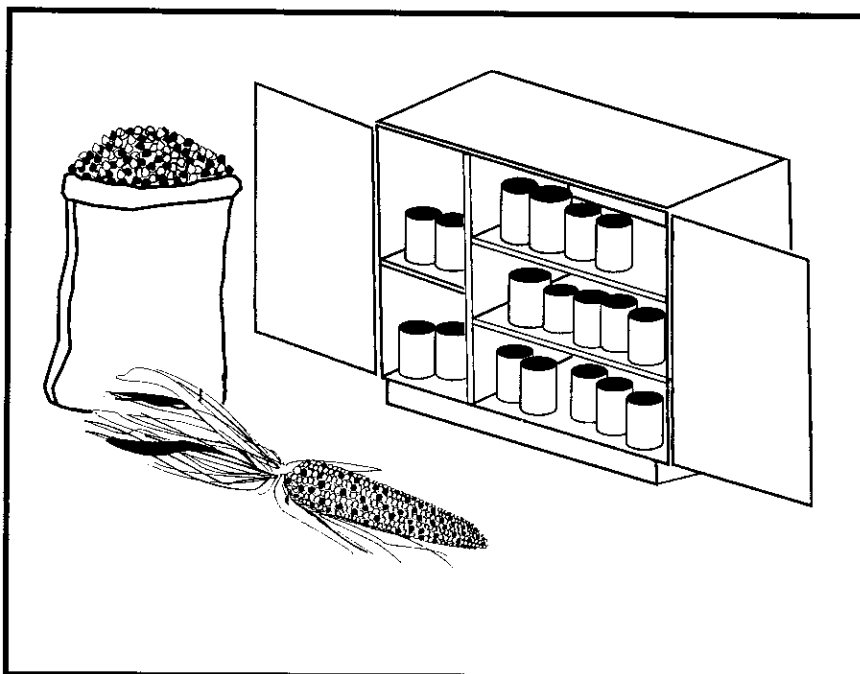
artificial one. Ask students to draw their own maps (to scale) of "Pawnee country," including the bison hunting area where they lived for many months each year. Scale, date, orientation, etc. should be included.

Three additional maps (natural areas, river names, and annual precipitation) are provided under Day Three of the Studying the Past section. Because Day One activities and information are so extensive, these maps have been listed under Day Three; however, they may be used here if you prefer.



## Day Two      **Worksheet: Corn/Modern Cupboard (Language Arts)**

Pawnee women stored food in cache pits. Each bell-shaped pit was 6 to 10 feet deep with a narrow neck and a floor about 10 feet in diameter. The bottom was covered with sand and then a grating of small sticks to keep the containers of food off the ground. The walls of the pit were of grass thatch. Fresh grass and a hide covered the cache before it was sealed with dirt and disguised to blend with the ground surface. The north and south families of the lodge shared the pit, using the same north/south arrangement as in the house. Careful planning was necessary each time the pit was opened (no more than once a month). In addition to regular meals for



the large household, calculations were made for meat, vegetables, and fruit that had been pledged for upcoming ceremonies, special guests, and travel supplies on the next bison hunt.

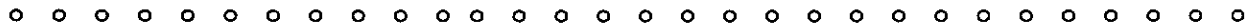
Vegetables were stored in hide sacks, ranging in size from the smallest (containing about a half bushel of corn or beans) to the largest, which held 100 pounds or more of dried corn kernels. Meat was stored in rawhide containers; each parfleche could accommodate 80 pounds of dried bison meat, which was arranged in 3- by 2-foot sheets, folded, and stacked with a sheet of fat between each layer. Leather sacks were undecorated; women painted geometric designs on the parfleches.

Each of the worksheets can stimulate language arts learning. The modern cupboard is shown here to suggest comparisons between Pawnee and modern ways of preserving and storing food. For vocabulary and dictionary skills, there are many new terms contained in the unit. The step-by-step construction process could be used to practice outlining. Using the "pair" system, ask two-member teams of students to prepare and present speeches, comparing some aspect of Pawnee life with modern life. Presentations should follow the alternating pattern.

For creative writing, students might imagine what the ceiling of an earthlodge looked like, with the sunlight coming through the smokehole and moving as the day progressed. Ask them to use the five senses to describe a scene around the hearth or a day harvesting corn in the fields. What kind of message might a Pawnee child send to the sky and how might he or she be answered? Ask students to finish this sentence: "Pumpkin soup tastes like ..." or "Wearing tanned leather clothes feels like ..." Pawnee children knew the ten varieties of corn, seven

varieties of squash, and eight varieties of beans that grew in the fields. Each variety had a name that described its appearance and/or its use. For example, blue corn was called *uraax-katit*, meaning "earth-black," referring to its very dark blue color, and *ati-katus*, meaning "bean-flat," a large flat bean. Ask students to create names for foods, colors, or any group of objects, using carefully chosen adjectives for each.

Ceremonies often included songs of praise and kinship with Mother Corn. Students could write poems that convey respect and honor for the environment, their favorite food, a personal hero, or a favorite author.



**Day Three Worksheet: Earthlodge Posthole Pattern/Earthlodge Frame (Science)**

When archeologists excavate a site, the wooden posts have burned or charred. Often the only evidence that a structure once stood is a pattern of dark circles as the soil is scraped away layer by layer. These dark stains indicate disturbed soil or may be the charred remains of house frame support posts. The position, size, and number of these circles is called a posthole pattern and provides important information about the structure. The pattern shown here corresponds with the frame.

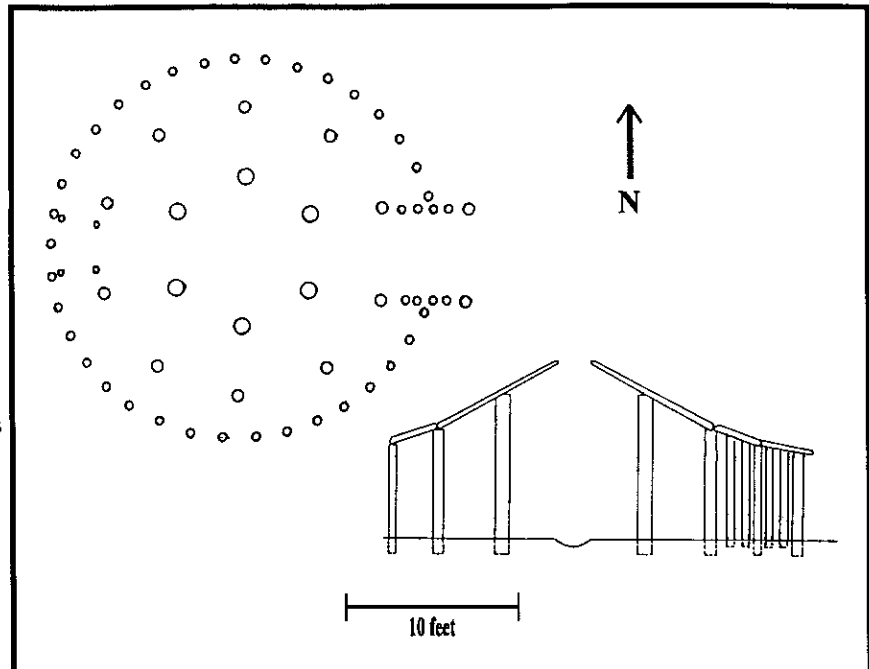
To demonstrate a posthole pattern, use small "posts" made of clay in a pan of sand. The sand should be at least 3 inches deep.

Arrange the clay posts in a circle in the sand. Slice off the posts at "ground level" to create a posthole pattern. Remember that ground level changes from century to century. Demonstrate this by covering the pattern with sand. Note: Archeological remains of earthlodges also usually include bits of fired earth with grass impressions that were once part of the outer earth covering.

Pawnee earthlodges were tied together with rawhide. The poles that form the roof's frame are under extreme pressure as they arch toward the center. The willow radials help distribute the tremendous weight of the earth layer. The roof is most vulnerable near the top, where the smokehole provides no support. Reinforcement rings of willow were necessary in this part of the roof to distribute the weight and provide additional support at this critical spot. The lodge roof was strong enough for people to gather there to visit, rest, or keep watch. Use the Pawnee method of house framing to discuss architectural tension and stress. Compare with Wichita grass house and other building techniques.

Encourage students to understand and produce their own drawings, showing floor plan, elevation, and cross-section views. Talk about the "bird's-eye" view (also called the plan view) in the poster pictures on page 39. To the Pawnee, celestial beings looked down from the sky, watching over the people.

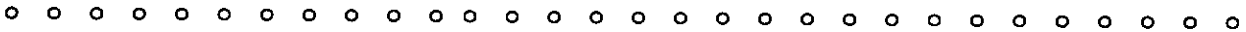
The impact on the local environment to build just one earthlodge was dramatic. Discuss the number and kinds of trees required to construct the framework. Don't forget to include wood necessary for the entryway and willow horizontal "mats" laid over the framework before the grass



layer was added. Estimate the amount of grass required for a single house. Then consider the amount of earth needed to cover a 50-foot-diameter lodge.

Demands on the environment did not end with the construction of the earthlodge. Discuss the amount of firewood or buffalo chips necessary to keep 40 hearths burning for heat and cooking. Gardening alters the landscape, too. Ceramics, outdoor structures, feed for horses, etc.—each product and activity required natural resources. Compare the Pawnee local sources of materials with our modern sources of supply.

Food webs, weather, types of prairie flora and fauna, and countless other science discussions can begin with the poster pictures on page 39. Pages 53-54 offer information about the corn culture of the Pawnee and provides a detailed list of the kinds of corn they cultivated. Nutritional needs and the balance of the Pawnee diet, using plants and animals, is another topic for consideration.



#### **Day Four    Worksheet: Modern House/Earthlodge (Math)**

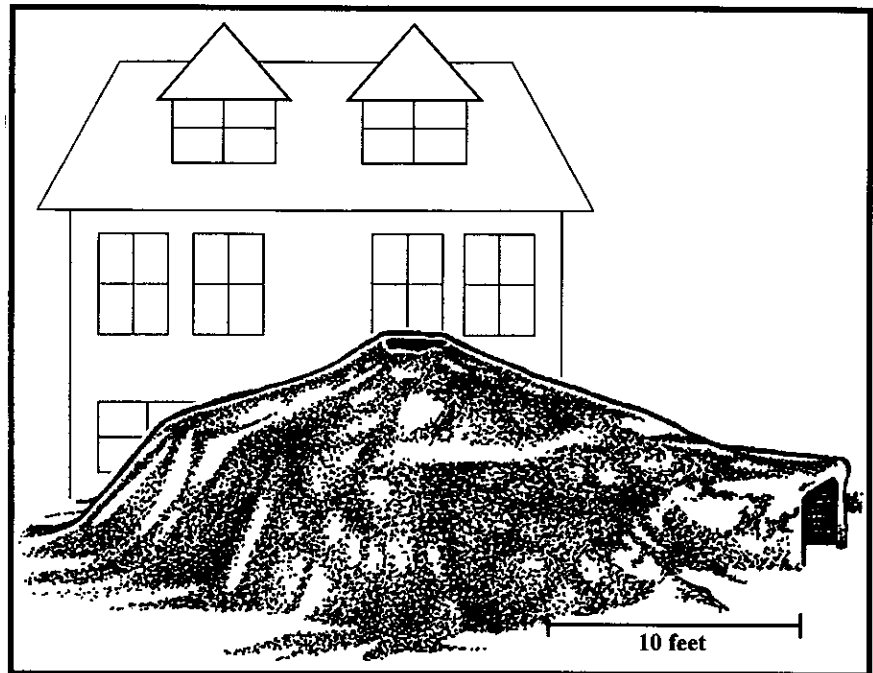
The modern two-story house is provided for size reference. Ask students to use the scale to determine the height of both houses. They could take measurements of everyday classroom objects and draw them to scale.

Archeologists use the metric system of measurement. Students could convert any of the English measurements given in the unit to their metric equivalents.

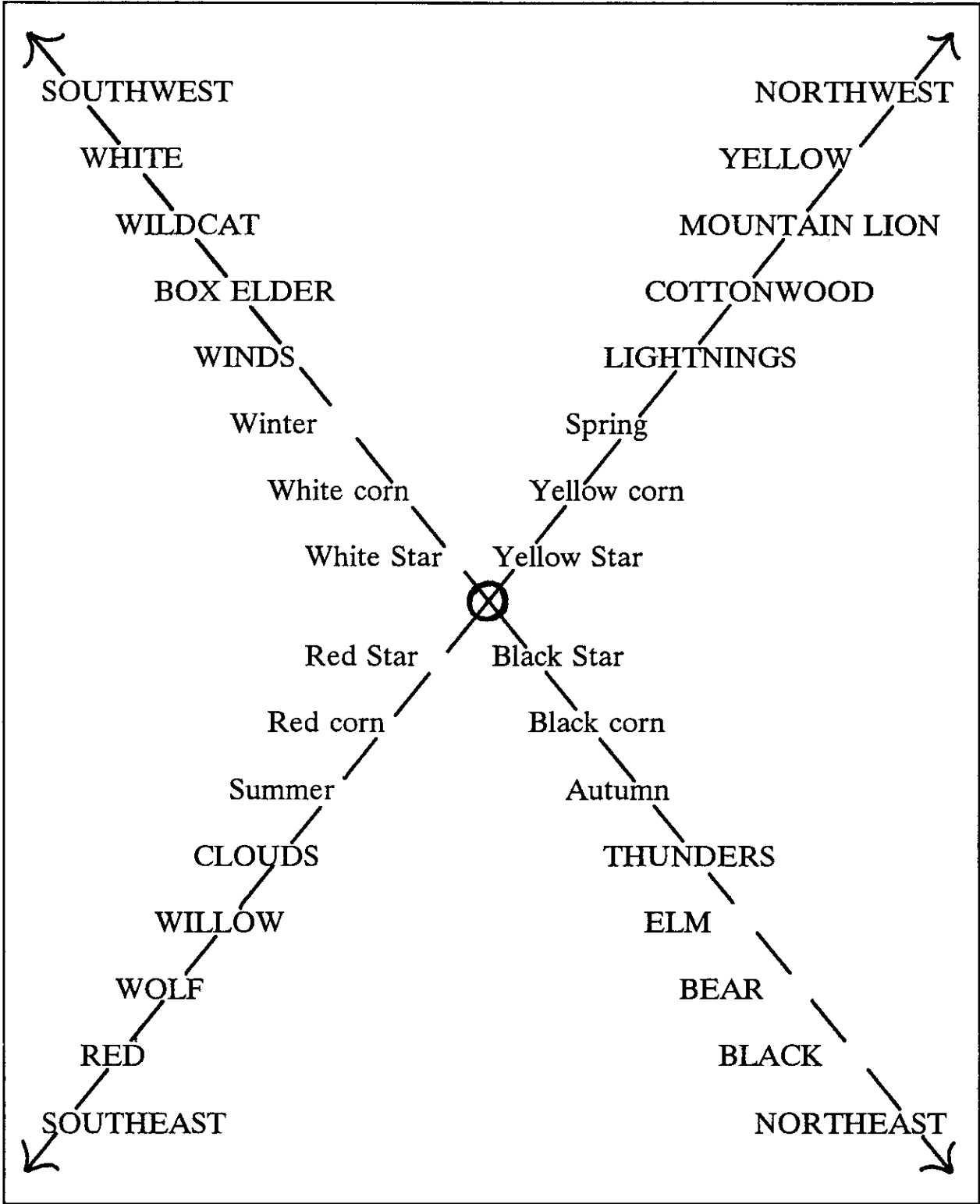
Pawnee earthlodges ranged in size from 20 to 50 feet in diameter. Because the floor plan is circular, it lends itself readily to math problems of radius, diameter, and circumference. Students could use chalk and string to draw lodges of various

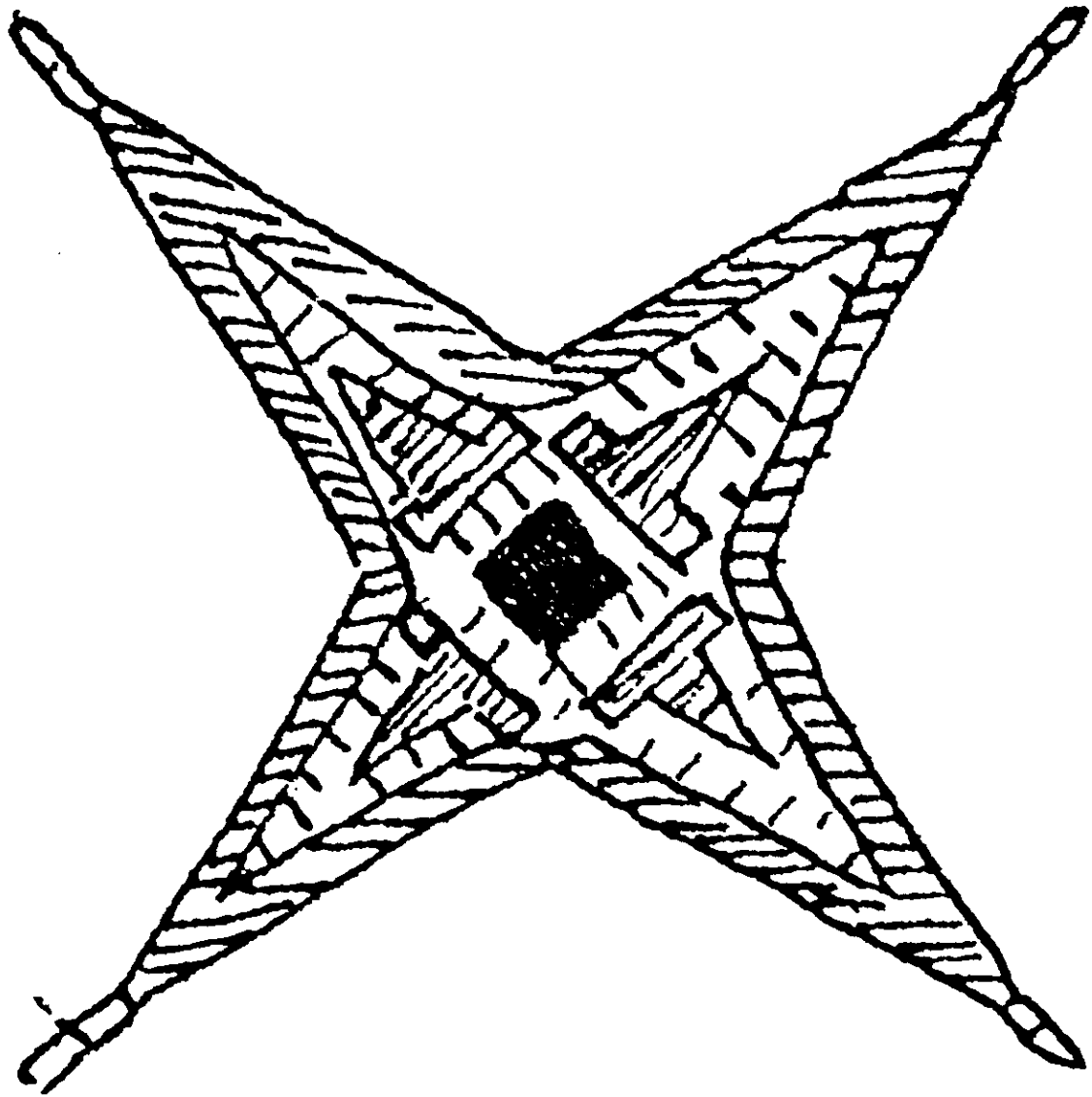
diameters on the playground or other surface. Remember to orient the entryway to each “lodge” to the east. More advanced students could figure square footage or compute the cubic feet of dirt needed to cover a 50-foot-diameter structure. The figures for the equation are scattered throughout the information provided in this unit. Younger students could practice fractions or percentages using the circular floor plan.

The information in this unit contains data that offer numerous possibilities for story problems. Use the other worksheets to integrate math into this unit.









<u>Color</u>	<u>Season</u>	<u>Indicates</u>
Brown	early spring and late fall	reduced biological activity
White	winter	biological activity nearly at a standstill
Green	spring and summer	growth, reproduction, and other activities

CONSIDER: Anyone who has walked a prairie after the first few frosts can testify to the deep reds of sumac, the oranges and purples of the grass, the buttery yellows of sycamore leaves. Ask students to consider some possible explanations for Pawnee color associations. Help them realize that every culture relates colors with certain seasons, emotions, and behaviors. As a group, list some of our common color associations ("seeing red," "green with envy," "feeling blue," etc.). Talk about seasonal colors, and watch week by week the greening of the world beyond the classroom windows. Name each week's shade of green during the spring.

NOTE: When plants turn color in autumn, they are displaying background colors that were there all along but had been obscured by high amounts of chlorophyll. Studying a past culture is like that, too. What meets the eye is not all there is to see.

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Some of what we know about the Pawnee ancestors comes from the old stories, handed down from generation to generation as part of their oral tradition. Some are sacred stories, some are instructional. Scientists compare stories, songs, etc., seeking similarities and differences. Some of this "group memory" is about the way life used to be, how the people came to live in various regions, and other historical traditions of the tribe. Other stories tell of the beginning of the world, how the people were taught to build houses and hunt bison and grown corn. Ethnographers (scientists who describe and categorize cultures) recorded the stories as a portion of their research in the late nineteenth and early twentieth centuries, when Pawnee people were interviewed in Oklahoma, the "final" home of the tribe.

Success in any Pawnee activity required careful ceremonial preparation before practical tasks could begin. The powers of the sky and the fruitfulness of the earth were inexorably joined. Accurate timing was assured by attention to the celestial signs. The proper time for awakening the earth after winter was signaled by two small stars known as the Swimming Ducks in the northeastern horizon near the Milky Way. Some astronomers suggest the Swimming Ducks were the stars Lambda and Upsilon Scorpio, which form the stinger of the Western constellation Scorpius.

Weltfish states that observations taken from within the earthlodge itself (priests sitting at the west, looking through the east-oriented entryway and up through the smokehole) indicated the correct star configurations. This would make the structure not only a dwelling, a replica of the universe, a ceremonial and social center, and a consecrated home for the sacred bundle and bison skull, but also an observatory.

The Pawnee year was 12 or 13 months long. Seasons were perceived as three-month periods, based on one month per full cycle of the moon: Winter was December through February, Spring was March through May, Summer was June through August, and Autumn was September through November. A thirteenth month, when needed to reconcile celestial reckoning, was added to Summer.

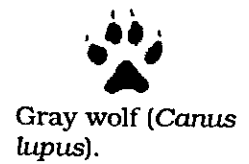
As the Pleiades took a certain position, the time was near for the First Thunder ceremony, referring to the month-long creation ritual. The sacred bundles, beginning with the Evening Star bundle and proceeding to the other bundles, would be opened and their powers released. The priests had the awesome task of recalling in perfect detail the creation, so that the universe could proceed in an orderly and prosperous manner. Plants and animals must be called from winter sleep. Not a seed could be planted until all was in order.

When the spring thunder began in the west and rolled all around the sky, it was almost time. Everyone was watching for sheet lightning and listening for the final signal—the thunder from the south. Following is a portion of the creation story (slightly adapted) as related to Weltfish (1965:80-83) by her informant, a Skidi Pawnee named Mark Evarts with whom she worked from 1928 to 1936.





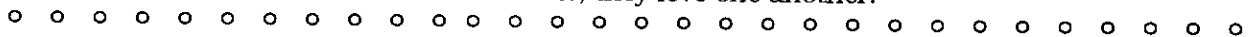
Students should research their group's associated animal. Masks, etc. would be suitable for younger students. Older students could create a poster showing information about their animals or try a potato-print project to show animal tracks. Students should be taking turns when presenting their information to the entire class. Create a song or poem to imitate each animal. The men who represented these animals danced and moved based on a hunter's observations. A hunter's knowledge of the environment involves a great deal of careful observations, discussion, and experience. When the spiritual aspects of Pawnee respect for animals is combined with experience, honoring an animal takes on more meaning than this activity can convey. Try to help students realize the deeper meaning of learning about an animal, a person, or a culture.



Talk about sports mascots and how we associate a characteristic of an animal with a team. (Kansas State University's mascot would be a good example, since it corresponds with the animal associated with the southwest, the wildcat.) However, remember that what we do with mascots is trivial and only very remotely akin to the feelings native people had, since survival of the people and their world depended upon honoring the plants and animals. The Pawnee belief system is very complex, and we are presenting only bits and pieces of it here ... under very different circumstances!

**Prairie.** Most of what humans can see and understand about the natural world is limited to "big" animals (seen with the naked eye) and "fast" action (a lifetime or less). We observe and describe the events around us based on our relatively short attention span. We know seconds, minutes, hours, days, months, seasons, and years, but even a century is a difficult concept to grasp. The prairie moves and changes too slowly for us to comprehend. Much more is happening than is apparent to human eyes. A stand of trees advances and retreats, but it takes too long a time for us to notice. We usually only observe what is going on above ground. Yet the mass of life that is cycling below the prairie surface is vital, too, for without the drama of bacteria, fungi, nematodes, and other elements, the prairie would be a dead, sterile place. CONSIDER: The earthworm ... . While megafauna such as bison or cattle are obvious to humans, they are far outnumbered by earthworms—a whopping 5 million per acre, weighing 150 tons! They aerate the soil, a significant contribution to the health of the prairie. Ask students to watch the coming of spring with more discerning eyes. What is the meaning beneath the meaning? A stranger studying a culture may miss truths "below ground." And here's a Pawnee saying to consider:

"Even the worms, they love one another."

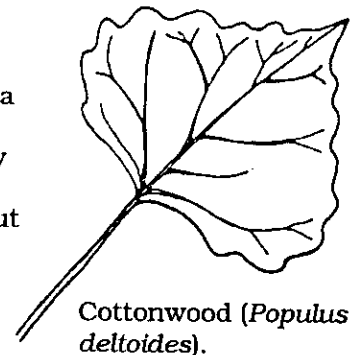


### Day Three Wood

**Materials:** Reference books, plant identification field guide, poster board

**Teacher Preparation:** None

Using encyclopedia, each group should research the specific kind of wood associated with its direction. Ask groups to make a poster with the shape of leaf, seed, blossom, fruit, type of bark, size, and area of optimal growth. What is the sound of the wind through the branches and leaves of each kind of tree? How common to the Smoky Hills is each? Why would different kinds of wood be used for specific purposes? How did children learn about the environment? Talk about how using wood to make houses, tools, weapons, dishes, toys, and other items (the actual hands-on procuring of materials and shaping them) makes the user more informed about identification of kinds of flora, age of individual trees, natural properties of each kind of wood,



etc. Handling kindling and firewood every day to supply the hearth was not only a chore but a lesson. What would a young girl learning to run a large household have to know about wood? Her hatchet (of hafted stone until trade metal became available) was an item we don't consider important for young women today. What other equipment might she find necessary in her work in the village, in her family's fields, on the plains for a bison hunt? Talk about toolmaking and the incredible advantages of hafting (affixing handles to) stone and bone tools. The trees are still here; talk with students about how we use them and how we see them and how our modern lifestyle affects the ways in which we perceive and use the natural plant resources of Kansas.

Here are some associations of wood in reference to building earthlodges:

Elm	Northeast	strips of bark tied wet to hold willow rings at lodge roof, mortar in mortar/pestle
Willow	Southeast	radials and rings at top
Box elder	Southwest	no specific use in building structure, except as part of outer ring of post supports; however, see "other uses" below
Cottonwood	Northwest	center posts (Remind students of creation story and the original four posts.)

Other documented uses for wood include:

Dogwood	arrow shafts, tent (tipi) pegs, used in Mother Corn ceremony
Ash	pipe stems, bows (for small boys), hoop for gaming hoop game
Osage orange	bows
Willow	special coiled gambling baskets (made by women only), corrals for horses
Hemlock	four hemlock war clubs in the four major sacred bundles (used in creation story to part the waters)
Post oak	pestles, eating bowls
Box elder	uncertain from documentation for Pawnee, although inner bark of box elder produces a purple dye used by some Plains Indian groups

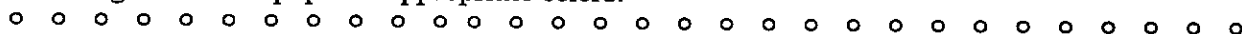
**Prairie.** A forest of trees on the prairie is a habitat for different animals than those found in the surrounding grassland. In fact, a stand of trees is like a long island in a sea of grass. This corridor of trees is called a gallery forest. Near the streams and rivers, which serve both as sources of water and as firebreaks, narrow forests can survive. Prairie fires kill the saplings that seek the sun, trying to grow at the margins of the bands of forest. There is usually an abrupt line where the grass stops and the trees begin. The grass cannot survive in the shade, and the trees cannot grow large enough fast enough to protect themselves from the destruction of fire.

With the value of wood for constructing dwellings, making useful objects, and as fuel, it is easy to see why Pawnee people and their ancestors incorporated important kinds of trees into their reverent associative structure of the world.

CONSIDER: Until the introduction of metal through trade with whites, the earthlodge people had stone and bone tools with which to alter the natural elements of the environment. Acquiring and shaping wood with these implements required familiarity with the natural properties of each kind of tree as raw material. Where a tree grows, its density, its moisture content, its response to drying, how it holds a shape or flexes, and the safety or toxicity of its parts are only a few of the things Pawnee people understood. Ask students to see the trees in your area in new ways. Find wild plum along the roadsides this spring, covered with fragrant white blossoms and humming with the activity of bees seeking nectar (and pollinating at the same time). Wild plums were gathered by Pawnee women for food. Plums, wild cherries, river grapes, strawberries, ground cherries, and other fruits provided essential nutrition, making gathering an important food-getting activity. Hunting and gardening are the larger, more obvious aspects of studying Pawnee foodways, but don't overlook a woman's knowledge of where and when to collect the prairie's natural harvest, using her bone-tipped digging stick, stone knife, and bone hoe. Remember that plants are useful as medicines, too.

NOTE: Kelly Kindscher's (1987) *Edible Wild Plants of the Prairie: An Ethnobotanical Guide*, available from University Press of Kansas, describes 121 prairie plant species used as food.

**REMINDER FOR ASSOCIATIONS DAY FOUR:** Remind younger students to wear their colors and bring ribbons or paper of appropriate colors.



## **Day Four    Natural Elements**

**Materials:** Drawing paper, noisemakers (pots, pans, spoons, etc. A plastic vacuum cleaner hose makes some great wind sounds!), white sheet and pillows for Clouds group

**Teacher Preparation:** None

Clouds, Winds, Lightnings, and Thunders were messengers from Evening Star, whose eternal garden is in the western sky. Pawnee people welcomed storms and went out to greet them. Pawnee warriors sometimes attacked under cover of storms. And of course storms are the movers and shakers of the Pawnee creation story. Talk about our responses to storms. Each group should create symbols to represent its element. Clouds could “build” kinds of cloud formations using a sheets and pillows. The others could be ready to make sound effects with noisemakers. The teacher, directing from center of room, can try combos and various rhythms. Make the “all around the earth” storm sounds of the Spring Awakening ceremony. Talk about weather and its effects both at the moment and as part of weather patterns and climate. Each group should find out about its element to report to the class (kinds of clouds, power and frequency of lightning, tornadoes, what makes thunder, etc.). Refer to the rainfall and natural areas maps in the Studying the Past section.

**Prairie:** The Smoky Hills are an equal distance between the North Pole and the equator. They are also midway between the east and west coasts of North America. The four seasons are powerful forces that dictate the lives of prairie plants and animals (and people). Like fire or drought, the time of year affects every living thing.

Because the Pawnee watched the positions of the stars, they could ritualize the changing of the seasons. And because they were involved in growing crops, they listened for the storm sounds and watched the sky to read the clouds for signs of rain and wind. And because prairie springtime signals animals and plants to begin a robust round of activity, the Pawnee could interpret early signs of the season’s change.

Every living thing on the prairie responds to the longer hours of daylight, the warming of the soil, the changing wind patterns. As spring progresses, more and more rain arrives from the Gulf of Mexico. Warm moist air comes flowing like a river of swirling air to meet the cooler air from the northwest. The denser cool air drops below the warm air and drives it upward, where it cools, condenses, and falls as rain. The prairie thunderstorms of spring bring clouds and thunder and winds and lightning. When tornadoes move through an area, the damage they leave behind clears the way for other organisms to move in. Lightning strikes and prairie fires rage, destroying as they roll up and over hills, sweeping the way for new bursts of plant growth. Catastrophe is a way of life in a prairie environment. Those living things that find ways to survive and multiply are evolution’s winners.

As the earth spins and tilts and wobbles on its axis, the days and nights of each season roll by. The planet tilts closer to the sun ... and it’s spring. Time for thunderstorms and clouds and lightnings and thunders. Time for winds that twist the trees and scatter the birds. Time for plants to push new growth toward the light. Time for mice to come out of their torpid sleep. Time for Pawnee seed corn to sprout inside the little mounds of dirt in the gardens. The axis tilts more ... and it’s summer. Time for prairie plants to make seed. Time for young coyotes to learn to hunt mice. Time for Pawnee gardeners to hoe the weeds for the last time, because the people will soon be traveling west to hunt bison. Now the earth begins to tilt back again, away from the sun ... and it’s autumn, when prairie plants lose their green chlorophyll blankets and let their other colors show. Animals must finish storing their energy in layers of fat. Pawnee villagers by the thousand stretch out single file across the hills on their way home to harvest the corn. At last the planet tilts again ... and it’s winter once more. Plants slow their systems. Animals either leave the prairie or hunker down to wait out the cold weather. Some even slow their hearts and

only wake up now and then to search for food. Pawnee people are loading up again for another long hunting trip. Their lodges sit like small hills on the prairie as the winter sifts snow down upon the roofs. Through all its tiltings, earth's travelers make their way from season to season. For century upon century, the Pawnee ancestors made the journey, too, as companions of the prairie in a spinning ride around the Heavens.

CONSIDER: With so much power in the sky—clouds, wind, lightning, and thunder—it is easy to see why Pawnee people honored the natural elements and watched and listened for the meanings of these messengers. Talk about who farmers listen to today. Why is the weather so important? Farmers still scan the skies, reading messages of weather in the shape of clouds, the smell of the wind, the distance of the thunder. And we all pay attention to Lightnings. The Pawnee walked around in storms, not afraid at all. As late as the 1950s, when so much of traditional Pawnee life was long gone, a Pawnee woman told how her people like the storms and go outside to meet them.



### **Day Five      Celebrate the Stars**

**Materials:** Materials to make stars (paper, string, and paper punch), flashlights, food (dried fruits, beef jerky, and cornbread from recipe below); noisemakers and sheet and pillows from Day Four

**Teacher Preparation:** Hang stars from the ceiling. Consider having children make stars over the previous several days, since a dozen or more of each color need to be hung from the ceiling to prepare the room for a celebration. For younger children, who should be wearing the official color of the group, be ready to provide a colored badge or ribbon for those who forget. Consider inviting another class to join you. Get some help from room parents.

After the harvest Pawnee people looked forward to a month-long event that was part ceremony, part entertainment. It was the showcase for the Doctor Society, whose members cleared an earthlodge of its usual furnishings and lined it with booths. They hung stars of rawhide from the lodge's ceiling. They rehearsed sleight of hand magic and constructed a water serpent of willow. Its jaws were big enough for a person to fit inside! Much dried bison meat and corn were consumed at these events.

This is a time to eat, review the unit, and reflect ... and have fun, too. Close the shades and let Lightnings group members take turns controlling the light switches. Let the Thunders and Winds and Clouds groups perform. Let the Animals perform. Recite the poems or stories written this week. In the dimness of the classroom, lie back and shine several flashlight beams at the stars overhead. Ask students to tell the story of "The Boy and the Mud Pony." Save time to talk about big bluestem (see Prairie section below).

To make cornbread, follow this recipe: Add small amount of water to 2 cups cornmeal to make very stiff batter. It must be stiff enough to retain its shape. Shape into round or oblong loaf in center of greased cookie sheet. Bake in preheated 425-degree oven for about 20 to 25 minutes. Bread should be brown all over and sound hollow when thumped.

Let students break off and taste a small portion. This could be part of a writing exercise. Be sure they understand that Pawnee corn for bread was cooked under the ashes in an "oven" made by parting the ashes of the fire and pouring the batter into that space. Ashes and coals then covered the batter and the loaf baked. When ready, it was pulled from the heat, and the ashes were brushed off. Ask students to imagine what these differences in cooking would mean in appearance and flavor.

**Prairie.** Before the prairie, eons of events took place in Kansas. Great inland oceans, earthquakes, glaciers, and deserts came and went. With the retreat of the last glacier, the prairie claimed the hills as its own. Prairie plants supported a fantastic web of life. All depended in some way upon the abundant grasses. Burrowing animals found shelter below the surface. Birds hollowed out hidden homes or wove their nests among the grasses. Horses, camels,

mammoths, and many other grazing herds of prehistoric animals fed on the prairie plants. The vast herds of bison grazed, followed by wolves and other predators.

When this prairie way of life was already ancient, the ancestors of the Pawnee people came here. They, too, depended upon the grassland for both food and shelter. Generation upon generation, they cut the trees along the waterways, harvested the prairie grass, and dug into the surface of the land to build their houses of wood and grass and earth. Earthlodge villages were islands in a sea of grass. The people relied on their corn (a kind of grass) and depended on bison, which in turn depended on the grass. When the ancestors of the Pawnee moved here, modern animals flourished, and the people followed a prairie way of life to survive. That the Pawnee accomplished much more than mere survival is evident in the remains of their culture, which archeologists study and which we all must seek to preserve.

The mixed-grass prairie that once stretched in a broad band from north-central to central Kansas is called the Smoky Hills. The mixed-grass prairie is a transitional zone between the tall-grass prairie (Flint Hills) to the east and the short-grass prairie (High Plains) to the west; its boundaries drift during periods of prolonged drought or abnormally high rainfall. The flora of the prairie is diverse, including forbs (non-grass succulent plants), shrubs, and trees. However, due to nearly perfect adaptation to the climate and resources of the soil, grasses (particularly bluestems, sideoats gramma, and Indian grass) dominate all plant life in the mixed-grass prairie.

Big bluestem is a major component of the flora of the tall-grass and mixed-grass prairies. Evolution has made the big bluestem plant very "prairie wise." It can survive fire, drought, and grazing. When things get too tough on the surface, bluestem relies on its underground storage system to see it through. Beneath the surface, a dense mass of roots anchors the plant, forming 8 to 12 inches of sod, which earthlodge people used as building blocks, but which actually may have developed to protect the plant from being ripped out of the ground by grazing animals. Twelve-foot-long roots extend below the sod layer. The seed head of a big bluestem plant has three spikes, which is why it is also called "turkey foot." Although big bluestem reproduces by seed, the prairie system does not make seeds the most efficient way of increasing grass; on average, conditions are just right only about once every 10 years. Very few seeds will have a chance to fall or be carried to a little spot of earth with enough space and the proper conditions to succeed. Even if a little plant starts, it has only one growing season to gather enough strength to live through the winter and compete with all the established big bluestem and other plants. By far the most efficient way for the grass to spread is by cloning itself. Underground stems called rhizomes move horizontally under the surface of the ground, sending up shoots wherever there is space. The underground system of rhizomes and roots is an efficient way to store nutrients. Here's a very simplified explanation of how it works: Grass must have sunshine and water and food. In its need to gather sunlight, the grass grows taller and taller, telescoping out from the stem, sending the blades up and out, competing with neighboring stems. Photosynthesis turns the sun's energy into food for the plant, which the above-ground stem and leaves use in part. But much of the strength of a good growing season is stored in the parts of the plant below ground.

Before prairie fires were controlled by American settlers, they raged across vast areas. Many prairie plants adapted to the fires, depending on the flames to kill competing plants or relying on the heat from the flames to open their seeds. Fires killed saplings, which kept the trees from invading the grassland areas, confining them along the waterways in most cases. These trees (oak, hackberry, willow, elm, cottonwood) still grow along the streams and rivers in corridors which biologists call "gallery forests." Fire could destroy the parts of big bluestem that were above ground, but the majority of the biomass was protected in the ground below the destruction. Scientists from Kansas State University are currently conducting long-range



experiments on the Konza Prairie to learn more about the ways burning affects the prairie. Some patches of the grass are intentionally left alone; other patches are burned every year, every other year, every year for four years, and then not at all for three years, etc. The scientists compare the effects of burning, searching for conditions that promote a healthy prairie. They are learning more and more about how this amazing environment works and how fire helps retrieve nutrients from the matted dead leaves and stems and gives them back to the living plants.

Drought does not destroy the prairie either, because the grass has evolved to store so much of its strength safely and use it during dry growing seasons. During the 1930s, when a long drought brought near destruction to Kansas crops, the prairie suffered but did not die. Nutrition in the bluestem dropped severely, but the plants survived. Maybe this also happened in the 1400s, when the archeological record of Pawnee ancestors in Kansas is a blank. Anthropologists speculate that the people went north, where they stayed for 150 to 200 years, until conditions in Kansas were again favorable for successful gardening and hunting. People who depend on corn plants for survival cannot remain for long where conditions change dramatically. A few inches less rainfall or too many days of hot wind at crucial points in a growing season can spell disaster. Several years of this shift in the climate can have dramatic results for gardening peoples. Big bluestem grass, though, can protect itself against the worst effects of drought for several seasons thanks to its storage system.

Grazing is being studied, too. Today the prairie feeds beef cattle, but for thousands and thousands of years the grasslands supported huge herds of grazing animals, including bison. Some studies have shown that the sharp hooves of the bison may have "plowed" the surface to the benefit of some prairie plants. Bison wallows, where generations of buffalo rolled in dust, have affected the compaction of the soil, which plants grow nearby, and how the rain water flows. Buffalo (or cow) chips and urine fertilize small areas of ground, changing conditions for local plants and animals. Trails to water can shape local plant environments, too. Scientists are looking at the cost to each grass plant as grazers tear off the leaves. They are studying the cost in dental damage to the grazers themselves, for the silica in the grass eventually wears down the grazers' teeth.

**CONSIDER:** Help students connect the relationship between grass and bison and compare with the modern grass/cattle system of land use. A prairie ecosystem offers opportunity to study many kinds of plants and animals, including those used in the Associations activity. Where are other prairies located? Prairies tend to exist in inland areas of continents, so look there first (pampas, steppes, etc.). What other grasses and forbs live on the prairie? More detailed study of prairie plants, a bird-watching field trip, a wildflower walk—any activity that sharpens the senses and increases students' awareness of their own environment will help in understanding the relationship between Kansas' native peoples and the natural world. Respect for the success of intelligent adaptations to prairie life is a way of teaching diversity in the classroom that can be a stepping stone to addressing contemporary issues. The thin, rocky soils of the Smoky Hills are more profitably used as grazing land than under cultivation. The exception is in the fertile stream and river bottom lands—just the place where village gardeners located their vegetable fields. When missionaries and United States Government agents interfered with the Pawnee system of living on the bluffs and farming in the bottoms, they insisted the Pawnee lay out their fields on higher ground and turn the heavy prairie sod with plows. The results were not good, and the people were hungry. Growing dependence upon annuities from the agencies that required abandonment of Pawnee ways of living was yet one more step toward destruction of traditions that had served the people well for 1,000 years. Combined with introduced diseases, pressure as Americans flooded across Pawnee lands on the overland trails, intensified crowding and warfare with the Sioux, Cheyenne, and other Plains Indians, and the destruction of the huge bison herds, the Pawnee were finally forced to relocate on land in Oklahoma. A successful way of life uniquely adapted to the natural environment could not withstand the tremendous environmental, political, and social forces of change of the nineteenth century.

## STUDYING THE PAST



### Day One Archeologists

Archeologists are scientists who work as a team to investigate the past. They search for meaning in the way each clue relates to others. They patch together an idea, using artifacts as big as a house or as tiny as a seed. They read a people's story from the charcoal of a long-dead fire or the shadows of a circle of stone.

When the Archeology Team arrives to study a site where people once lived in earthlodges, the buildings are long gone. Remains of the busy village sleep below a pasture's surface. Ancient gardens lie hidden on a flood plain beneath layers of soil and the crops of a modern Kansas farmer. All is quiet except the wind blowing through the tall corn and the cicadas droning in the trees near the river. Not a village sound remains. No horses whickering to one another. No thumping of wooden mortars as the women grind corn into meal. No discussion of tomorrow's work. No running feet as children race. No grandma's lullaby for a sleepy baby. The voices of the people are gone. But the Archeology Team is trained to discover the echo of a people's past through the evidence they left behind.

**How do we know about the Pawnee and their ancestors?** Scientists and specialists cooperate with one another, comparing and evaluating what each has learned. Archeology, ethnography, ethnohistory, and history are major fields of investigation. The experts from these disciplines are helped by geographers, biologists, astronomers, and many other experts. People like you and me help too—by knowing what to do when we find evidence. When all the information is put together, a story of great importance emerges, a story that spans many centuries and documents great changes in the ways people have learned to live on the prairie.

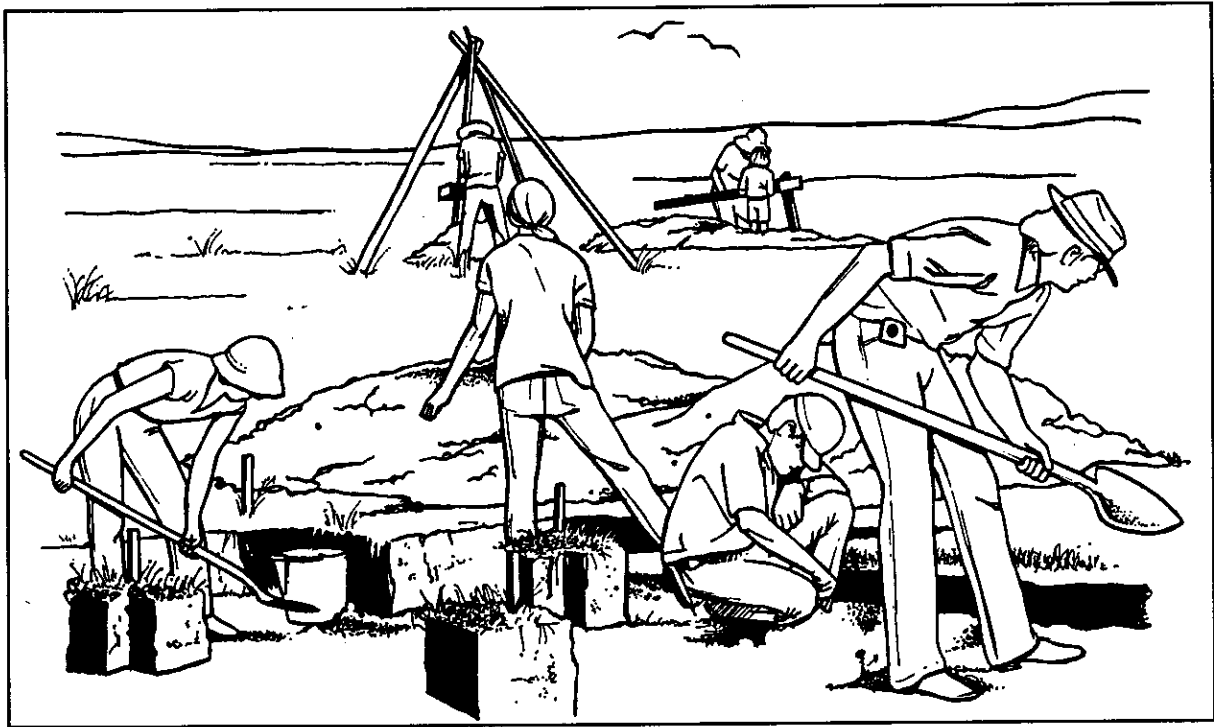
In the case of the Pawnee, the written records of early Spanish, French, and American explorers are studied by ethnohistorians. This specialist is an anthropologist who studies historical documents—maps, court records, government reports, letters, diaries. Often there is confusing or contradictory information. For example since 1541, when Spanish records mention hearing of the people of "Harahey," there are all sorts of references to the Pawnee, spelled "Panl," "Panis," "Pan," "Pahani," etc. Untangling the confusion is not easy. Some of these records are 400 years old! The records tell of exploration, trading parties, battles, and chance meetings with people who lived in "Kansas" and "Nebraska." Again and again, ethnohistorians read of the earthlodges and large garden fields of the settlements in the river valleys of the Republican, Platte, and Loup rivers.

While the ethnohistorians were trying to make sense of the written records, ethnographers were at work recording what was left of Pawnee traditions. They interviewed Pawnee elders who remembered the old ways of their great-grandparents. These descendants shared the old songs and stories handed down to them from the times before.

Archeologists seek information using their special methods. Archeology depends on the evidence left after people have used a place. The charcoal and burned earth from a hearth or house fire, the discarded bits of bone, stone, and shell, the way a section of land looks and what plants it produces are all signs that can tell the story of a place and the people who once lived there. Sometimes the first clue is a piece of broken pottery (called a sherd) that turns up on the surface of a plowed field. Heavy rains can wash away soil to expose a stone arrow or dart point. Finding some "surface evidence" can lead to a carefully planned scientific investigation of a site. The information that archeologists seek must be gathered in a precise way, or it becomes just a jumble of artifacts that offer only a little information.

Using scientific methods, a trained team of archeologists and their assistants can gather valuable data that can add to our knowledge of past peoples. As they excavate carefully, layer by layer, they use trowels and shovels, small brushes, and measuring equipment. The artifacts and features, such as stained earth and charred bits of wood, all relate to one another. An object found *in situ* (in place just where it was left) is studied in association with all the other clues. Each piece of evidence at a site is carefully bagged and numbered. Much of the soil is sifted to recover small items. Some of the soil is washed so that tiny seeds and other material float out of





the dirt and can be recovered. A map of the site shows exactly where everything was found. Photographs and drawings help preserve the way the site was arranged. All this work must be done accurately, because the excavation destroys the site. The artifacts are taken to the laboratory, where they are numbered, recorded, and studied. Archeologists systematically categorize the tools, weapons, cooking utensils, and other pieces of material culture into groups. They sort objects according to the materials from which they are made, such as stone, bone, wood, and shell. They also look at the evidence to find patterns that show when the objects were made and how they were used. Finally, a written report that explains the findings adds to the volume of knowledge.

Archeologists have investigated numerous sites of the earthlodge peoples. Among other things the posthole patterns at these places told a story of changing needs and practices. Sites about 1,000 years old revealed that earthlodges initially were small and square. These early sites were home to small groups of perhaps 50 to 100 people and were more like hamlets or farmsteads. The later sites showed that over time the earthlodges were round and larger and that there were many more people in each place—villages now instead of hamlets. Archeologists found remains of a central hearth in each earthlodge and underground storage pits. These pits, once packed with food but now trash-filled, contained broken tools and pottery and other refuse that provides good information about a culture. All the clues together (house size, shape, location, tools, etc.) revealed similarities between the sites.

Scientists began to compare their findings. Their research pointed to a long tradition that changed over time (like the shape of the houses). Another difference was found in methods of hunting bison. The older tradition was to make short trips of three or four days away from the villages, while the newer practice was of extended hunts far from home.



## **Day Two      Archeology's Numbering and Classification Systems**

**Numbering System.** Archeologists across the United States use a system of numbering the sites they study. The system includes three parts:

State code Kansas is numbered 14.  
 County code An abbreviation is assigned to each county; for instance, Norton County is NT.  
 Site code A unique number is given to each site; for instance, 301 for the LeBeau Site.

**Classification Systems.** A scientific classification system is a taxonomy. Scientists use taxonomies as a way of grouping the similarities and differences of plants, animals, stone, etc. For example:

<u>cottonwood</u>	<u>bison</u>	<u>Smoky Hill jasper</u>
Kingdom - Plant	Kingdom - Animal	rock
Division - <i>Magnoliophyta</i>	Phylum - <i>Chordata</i>	sedimentary rock
Class - <i>Magnoliopsida</i>	Subphylum - <i>Vertebrata</i>	silicate (SiO <sub>2</sub> )
Order - <i>Salicales</i>	Class - <i>Mammalia</i>	quartz
Family - <i>Salicaceae</i> (willow)	Order - <i>Artiodactyla</i>	cryptocrystalline
Genus - <i>Populus</i>	Suborder - <i>Ruminantia</i>	chert
Species - <i>deltoides</i>	Superfamily - <i>Bovoidea</i>	jasper
	Family - <i>Bovoidea</i>	
	Genus - <i>Bison</i>	
	Species - <i>bison</i>	

Although not as clear-cut as the classification systems used by biologists and or even geologists, archeologists have proposed several taxonomic systems to organize their data so that it can be analyzed efficiently and compared to the findings of other archeologists. One of the basic units of archeological analysis is the SITE, a place where evidence of past human presence is found. Within a site there may be one or more COMPONENTS, or remains of the activities of one group of people at one time. Multicomponent sites contain evidence for the activities of different groups of people at different times in the past. When a component of a site has very similar content and age as components of other sites, they are categorized as a PHASE. Phases present in an area for long periods of time can be grouped together into a broader category called a TRADITION. Here is an example, using one of the proposed classification systems, the Willey-Phillips Operational Basis for Cultural-Historical Integration:

14NT301 (LeBeau Site)

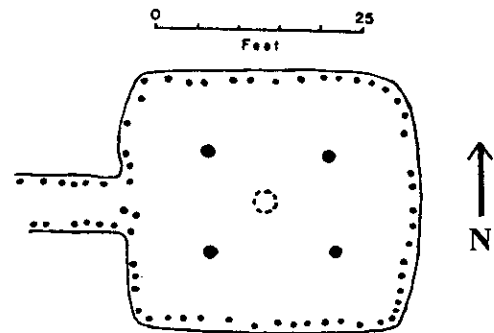
Full Cultural Tradition - Plains Village Tradition  
 Subareal Tradition - Central Plains Tradition  
 Phase - Upper Republican Phase

Components - at sites 14ML417, 14NT301, 14SD305, and others

Pawnee people used their own taxonomic system through association. They categorized colors of corn (see Day Two of the Associations section), according to a system tied to color ... which in turn was tied to directions ... which in turn was tied to Power. Part of what it means to be human is to organize the natural world into a naming system that is passed on from generation to generation.

**Central Plains Tradition Sites in Kansas.** The first peoples who built earth-covered houses and grew corn and other vegetable crops are identified as the Central Plains Tradition. In Kansas the cultures that combine to make up this tradition are the Upper Republican Phase, Smoky Hill Aspect, and Nebraska Phase. In the 1930s archeologists concluded that the Upper Republican Phase represented the prehistoric Pawnees. In more recent years this direct link has been questioned; nevertheless, there are many similarities.

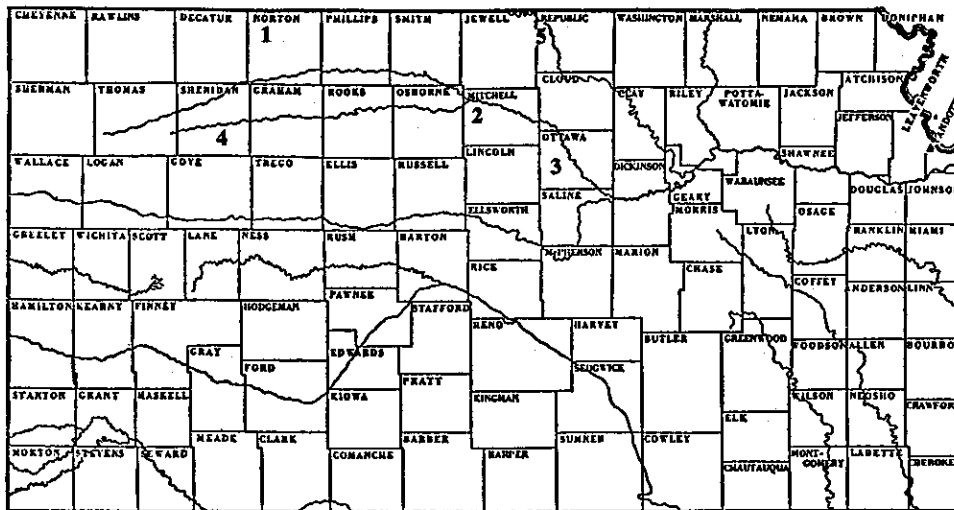
Archeological sites of the Upper Republican Phase are found on tributaries of the Kansas River in the northern half of the state. Hamlets were generally on creek terraces, where single houses or clusters of two to four lodges were randomly scattered at intervals of a few



Floor plan of an Upper Republican Phase earthlodge, showing posthole pattern and central hearth but omitting cache pits.

yards to several hundred feet. The substantial earth-covered dwellings were usually square or rectangular in floor plan with rounded corners and long, covered entryways, facing away from the prevailing winter winds. In the center of the floor was a simple, unlined hearth. Bell-shaped cache pits for food storage were present beneath the floor, and small refuse dumps often occurred not far outside the door. The nearby creek bottoms would have provided easily worked, fertile soil for gardens. Hardwood trees were available, too. The people disposed of their dead in various ways. Often the body was exposed for a time, and then the loose bones were placed in large communal pits (called ossuaries) that were situated on bluffs overlooking the village sites. Sometimes pottery, shell ornaments, and chipped stone objects were buried with the dead. Sometimes unusual items in the sites indicate trade or other contacts with distant peoples to the east, north, and south.

Below are some examples of Kansas sites where evidence of past habitation was studied. Use them in connection with gardening, storage pits, etc. or in conjunction with map study.



1. 14NT301 (LeBeau Site), Upper Republican Phase. On the Walnut Creek drainage at the eastern edge of the High Plains in the short-grass prairie, archeologists have found good evidence of the stone these prehistoric people used to make tools. One of the natural resources here is Niobrara chalk, found in outcrops along stream beds. The outcrops contain deposits of jasper, a hard flint-like stone. The LeBeau Site contained typical Upper Republican projectile points. Around A.D. 920±150 prehistoric flintknappers flaked these small triangular points, scrapers, and knives from the local stone.

2. Glen Elder Sites, Mitchell County, Upper Republican Phase. At Upper Republican sites in Mitchell County, archeological excavations were necessary to salvage valuable information before construction of the Glen Elder Reservoir. At the sites, which dated around A.D. 1100, archeologists found good evidence of some of the animals used by the prehistoric people. Along with bison and other mammals used for food, they found evidence of fishing in the form of bone fishhooks. There were also bones of bobcat, probably used for purposes other than food.

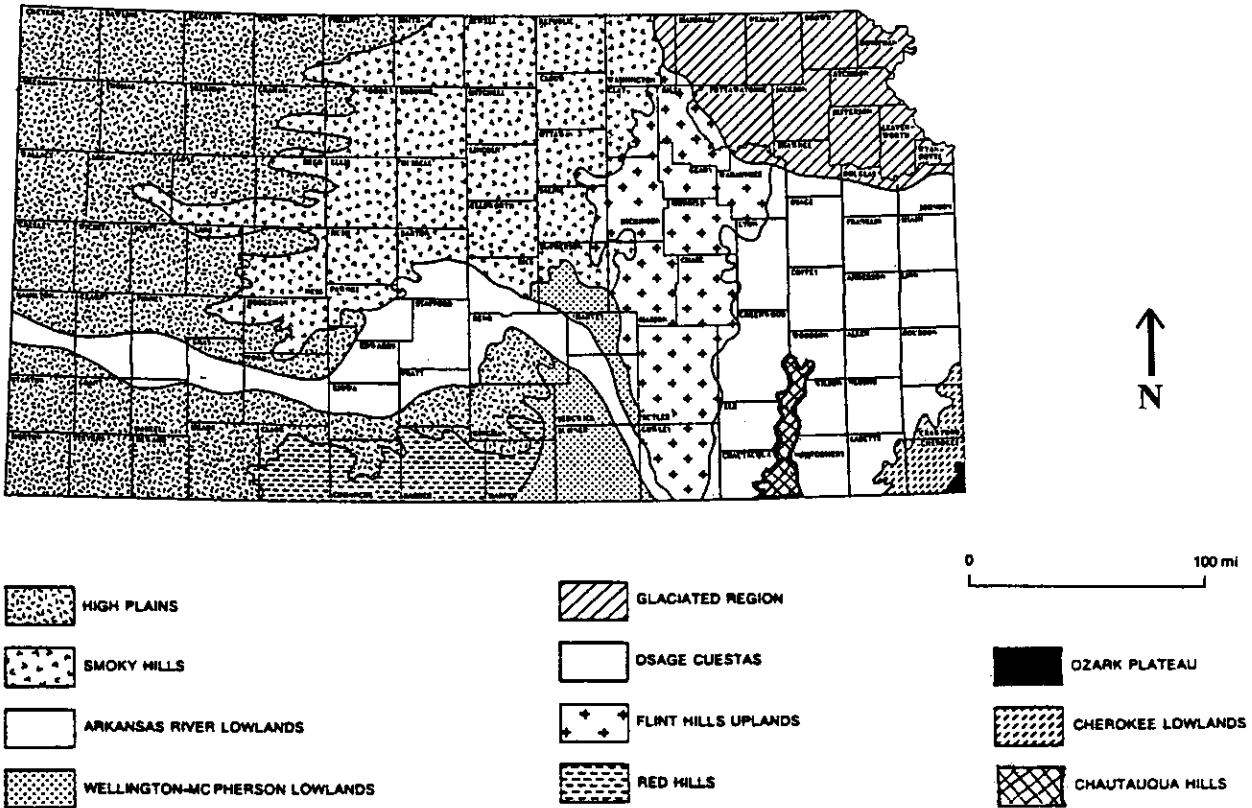
3. 14OT5 (Minneapolis Site), Smoky Hill Aspect. This large prehistoric earthlodge village, dating to A.D. 1220±70, was first excavated in the 1930s. Situated along the Solomon River, archeologists found more than 20 houses. Burned daub, excavated at the site, indicates that these earth houses were at least partially plastered over with a clay and grass mixture. In excavations during the 1970s, archeologists interpreted one of the houses as a rectangular earthlodge, 32 feet wide east to west and 38-39 feet long north to south. The 11- by 4-foot entryway extended from the center of the north wall. The central hearth was a basin-shaped pit, containing ashes and charcoal. The four center posts around the hearth were set at the semicardinal directions. Five other pits were much deeper, and at least one was bell-shaped.

These pits, once used for food storage, had been filled with trash before the house was destroyed. The archeologists found bison tibia digging stick tips, pottery sherds, and stone tools.

4. 14SD305 (Albert Bell Site), Upper Republican Phase. People lived here in approximately A.D. 1375. The two square earthlodges excavated here are part of a settlement pattern common at this time. During this period, archeologists have learned, the people were living in isolated hamlets strung out at half-mile intervals along streams. The lodges are still square to rectangular in shape and still have four interior center posts. Neither house at the Bell Site had deep storage pits. Scapula hoes and corn, found at the Bell Site, are evidence of gardening, although this is probably as far west as corn horticulture could succeed.

5. 14RP1 (Kansas Monument Site), Pawnee. This Indian village probably was inhabited in the 1820s and 1830s. About 1,000 people lived in 30 to 40 lodges that were 30 to 40 feet in diameter. A protective wall of sod and timber surrounded the village. Like so many sites, plowing had destroyed part of the evidence. To help preserve and interpret the remaining part of the site, a museum building was constructed over one of the large house depressions, and it was excavated. Now the Pawnee Indian Village State Historic Site is open for the public to see.

**Day Three Maps**



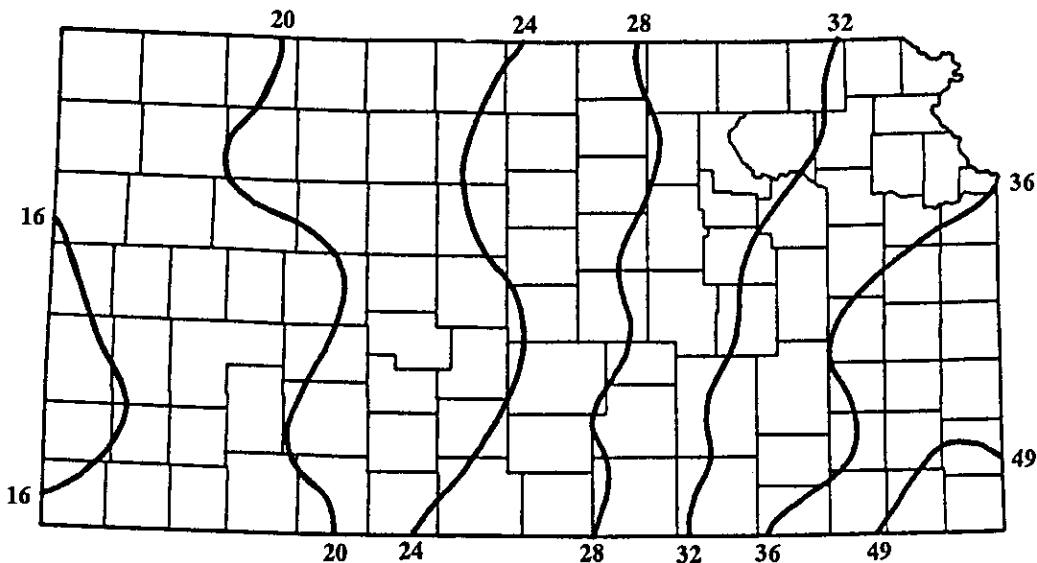
**Natural Areas Map.** Locate the Smoky Hills area of Kansas. This is the part of Kansas in which the Pawnee earthlodge villagers lived. Identify the natural area where bison hunting took place. Discuss the factors that determine the flora and fauna of these areas. Compare these natural areas and those determined by artificial means (county lines or state borders). What factors determine how an artificial boundary is drawn? How did Pawnee activities alter the natural areas? Locate your natural area and ask the same questions.

The Smoky Hills natural area is a mixed-grass prairie, which includes plants and animals of the tall-grass prairie of the Flint Hills to the east and the short-grass prairie of the High Plains to the west. Annual precipitation plays an important role in determining what types of flora and fauna occur in any place. The geological history of a place is important, too, in what types of land forms, drainages, soils, and rocks will be present. The Smoky Hills is formed mainly of thick beds of Dakota sandstone with some limestones and shales.

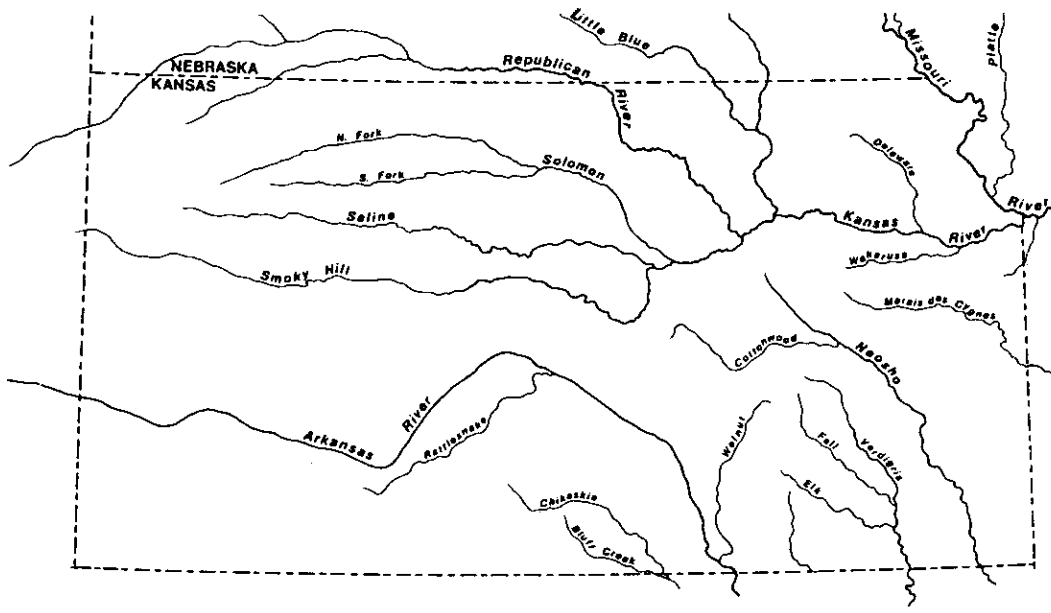
The tributaries of the Republican River were favorable locations for Upper Republican Phase and later Republican Pawnee village sites. Streamside terraces near the water with tillable, fertile soil and gently sloping hillsides with broad, well-drained bluff tops for building the houses made (and make) the area well suited for agriculture.

With slightly less rainfall than the tall-grass prairie, the Smoky Hills area was home to many kinds of animals. Bison, elk, deer, and antelope were abundant, along with the plains grizzly, black bear, wolf, coyote, cougar, bobcat, swift fox, black-footed ferret, badger, beaver, otter, porcupine, raccoon, opossum, prairie dog, tree squirrel, jackrabbit, cottontail, and numerous small rodents. Quail, turkey, prairie chicken, and grouse were available throughout the year along with ducks and geese in season. There were also typical prairie insects, reptiles, and amphibians: grasshoppers, butterflies and moths, mosquitoes, flies and chiggers, frogs and toads, turtles and terrapins, etc.

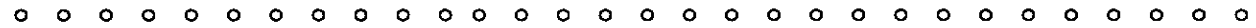
The grass, trees, shrubs, and forbs here are similar to tall-grass in the moister areas, and more like short-grass prairie in the large sweeps of grassland where it is drier. Only a few inches can affect dramatically the communities of plants and animals found in each of the areas. The plants here were dominated by bluestem and grama grass and trees and shrubs, scattered or growing in gallery forests along the streams. Mixed prairie grasses include little bluestem, sideoats grama, and buffalo grass, with the moister areas supporting big bluestem, Indian grass, switchgrass, and cordgrass. Trees included hackberry, cottonwood, willow, and elm. Fruit- and berry-producing shrubs, such as chokecherry, wild currant, gooseberry, plum, and grape would have provided additional food sources for the people.



**Annual Precipitation Map.** The map shows average annual precipitation in inches. Compare annual precipitation in the Smoky Hills natural area with the surrounding areas (and with your area, too). Talk about what forms precipitation takes and about factors that can determine how much of this moisture is available to the plants, animals, and peoples of an area (drainage systems, permeability of the soil, topography, etc.). Although the Pawnee did not irrigate, many farmers in the Smoky Hills area today use irrigation to increase the yield per acre of their crops. Discuss the ideal growing conditions for Pawnee crops compared with soybeans, milo, wheat, and other modern crops grown in the Smoky Hills today.

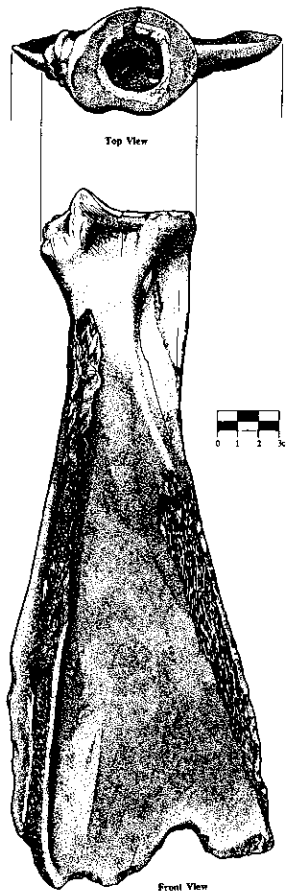


**River Names Map.** Locate the Republican River; help students understand a drainage system. Compare the Republican River valley with the river system in your area. Using the site map on page 79, locate some Upper Republican Phase sites. Using a modern Kansas map, compare the location of some modern Kansas towns in relationship to river systems in the state. Discuss similarities and differences between Pawnee and modern sites: use of land, location of settlements, association with other communities, trade routes and road systems, etc. Discuss rivers as natural boundaries. Compare the village/river association with the plains bison hunting area. Remind students that only the main waterways are shown. Look at a local map to see the tributaries of a nearby river.

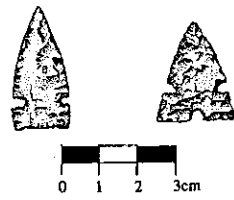


**Day Four Artifacts**

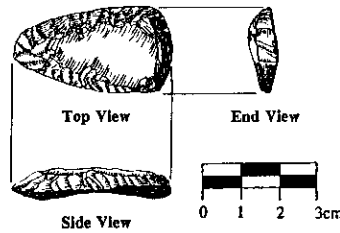
Artifacts recovered from Central Plains Tradition sites demonstrate that the people cultivated gardens, hunted, and fished. Bison scapula hoes were common. Wild and domestic plants were processed with milling stones, hammerstones, anvils, and chipped stone chopping tools. Weapons included the bow and arrows, which were tipped with small triangular side-notched points. For skin-working there were chipped stone snubnosed end scrapers, drills, and various kinds of knives, including the diamond-shaped form with four beveled edges, bone awls, eyed needles, and dehairing tools. Curved, barbless bone fishhooks were used. Red and yellow minerals for pigment, along with bracelets, gorgets, pendants, and beads of bone, and a few shell ornaments served for personal adornment. Smoking pipes were fashioned from stone. Many of these durable objects once had handles or other parts of wood, leather, fiber, etc., but those perishable materials have not been preserved in the archeological record. For example, the only evidence that basketry and textiles were crafted comes from impressions on pottery.



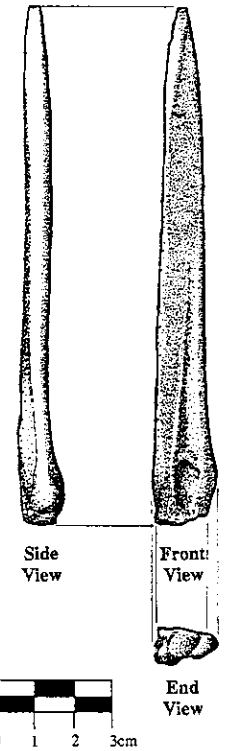
Bison scapula hoe blade.



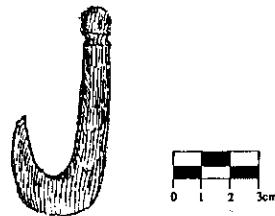
Arrow points.



Snubnose end scraper.

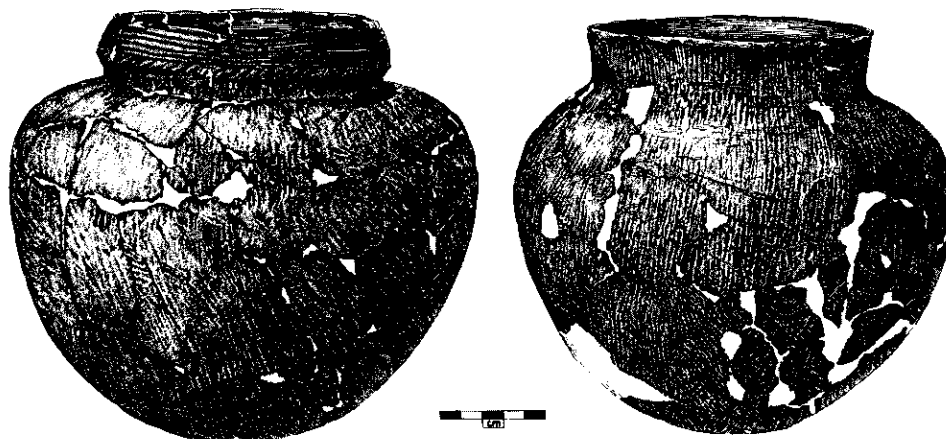


Bison bone awl.



Bone fishhook.

Pottery was plentiful. Upper Republican potters made large full bodied, round-shouldered, and round-bottomed jars with clay that was tempered with sand. The walls were thin except at the rim, which was thickened and wedge-shaped (called a collared rim). The exteriors were plain or roughened with a cord-wrapped paddle. Decoration usually was incised or trailed horizontal or diagonal lines on the rims and shoulders of the pots. Archeologists use pottery as a way of comparing and identifying types of sites.



Upper Republican Phase pottery vessels (Wedel 1986:107).

## Day Five Stand Guard!



Only with the cooperation of the citizens of Kansas—young, old, and everyone in the middle—can we guard the precious archeological record of our state's long history of human occupation. Stewardship, the planful managing and protecting of a place, is a job that requires the cooperation of everyone.

Archeologists depend on each person to share the responsibility of preserving the archeological heritage of Kansas. As a partner in that work, here's what you can do:

**Read** about Kansas' unique cultural heritage.

**Visit** your local museums and libraries. Check out the Pawnee Indian Village Museum in Republic County.

**Ask** questions. Teachers, librarians, parents, members of the local Kansas Anthropological Association will help you learn more.

**Keep your eyes open!** If you notice an artifact or a clue, guard it! Leave it in place until archeologists can investigate. Here's the number to call: 785/272-8681, extension 268.

**Remember:** Archeology is a science that depends on the help of people everywhere. Because each piece of information fits next to the pieces around it, moving a clue would confuse its meaning.

### TWO KANSAS LAWS THAT PROTECT ARCHEOLOGICAL SITES

In 1967 the Kansas legislature passed a law called the Kansas Antiquities Commission Act (K.S.A. 74-5401 to 74-5408). This act requires an individual, institution, or corporation to obtain a permit before excavating archeological sites located on public property, owned or controlled by the state, or any of its subdivisions. It requires a person to report archeological discoveries on public property to the State Archeologist and to protect them from damage if found during construction. Any person removing artifacts from or vandalizing or defacing any archeological site can be punished by a misdemeanor penalty.

In 1989 the Kansas Unmarked Burial Sites Preservation Act (House Bill 1244) established a procedure for the protection, treatment, and disposition of human skeletal remains, and associated grave artifacts, from unmarked burial sites. It established an unmarked burial sites preservation board to make recommendations for the disposition of human remains and grave goods and provided for a registry of unmarked burial sites. The act prohibits any person from willfully disturbing an unmarked burial site or from possessing selling, trading, giving away, or throwing away human skeletal remains or grave goods. A person may be fined from \$5,000 to \$100,000 for breaking the law.



# VOCABULARY



## Day One

anthropology  
archeology  
bison  
cardinal directions  
culture  
hearth  
earthlodge  
material culture  
Pawnee  
prairie  
semicardinal directions  
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

## Day Two

cache pit  
fauna  
horticulture  
rawhide  
scapula  
scapula hoe  
sinew  
storage pit  
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

## Day Three

box elder  
cottonwood  
elm  
flora  
mortar  
nomad  
parfleche  
pemmican  
pestle  
tipi  
willow

## Day Four

altar  
bison skull  
bluestem  
rhizome  
sacred bundle  
tall-grass prairie  
○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

## Day Five

biomass  
forb

