PIONEER PHOENICIANS

Overview

During this activity, students describe eight groups of Pioneer Phoenicians by drawing perceived needs and values on coats of arms. They also compare the natural resource impact of the settlers with their own.

Subjects: Science, Social Studies
Group Size: Entire class
Estimated Teaching Time: One hour
Curriculum Framework: IIA, IIB, IIC, VA, VIIB
Environmental Education Framework: Goals IA, IIIA, IVB, VA
Vocabulary: caliche, canals, Central Arizona Project (CAP), cowboys, Doctrine of Prior Appropriation, Hohokam, per capita, Pima, Pumpkinville, Spanish, trappers

Objectives

Students will:

- infer and illustrate the impact of eight different groups of settlers on natural resources.
- compare how the cultural attitudes of each group determined how they met their needs.
- analyze the differences between their own attitudes toward water and the attitudes of Pioneer Phoenicians.
- formulate ways in which cultural attitudes, social needs and our natural resources can be brought into balance.

Background

Arizona has been the destination of travelers and settlers for many centuries. As people of different cultures came to live in the Phoenix area, they left their impact upon the local environment. People impacted everything including local water supplies, landforms and wildlife.

Several waves of immigration to this area can be identified. Each new wave brought with it a predominant cultural group. While it is true that people of varying needs and interests may have come to Arizona at many of these times, the waves of immigration are identified with a predominant one since that groups' attitudes prevailed during that period of settlement.

This activity focuses on eight groups: the Hohokam, the Pima, the Spanish, Trappers, Miners, Cowboys, Farmers, and Modern-day

Pioneers. The first pioneers to Phoenix were Native Americans. The Hohokam were the predominant tribe between 300 B.C. and 1400 A.D. Compared to modern settlers, the Hohokam brought little with them and left little behind. The Hohokam were followed by the Pima and Maricopa tribes that continue to inhabit part of Maricopa County. European settlers followed the native peoples. Each group brought increasingly more goods with them, and likewise, left behind increasingly more evidence of their existence. Often the environment showed the impact of these remains.

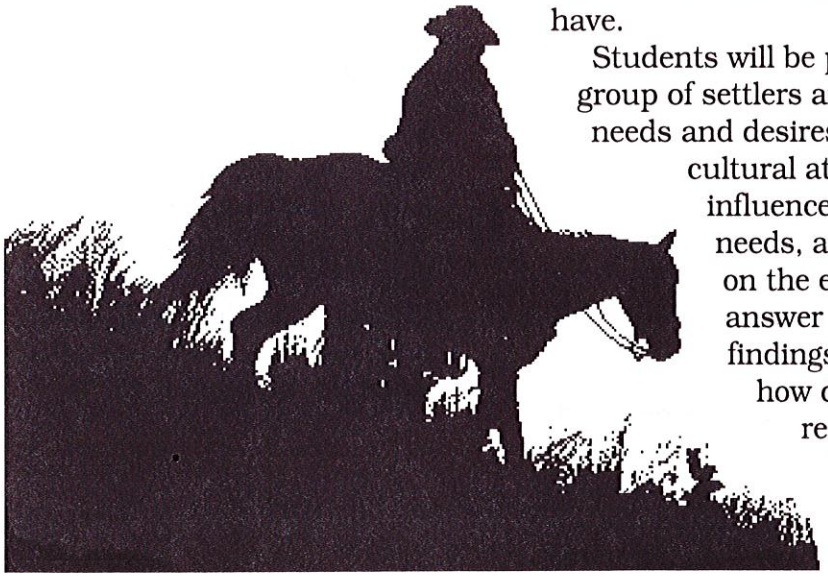
In this activity students are not judging if attitudes and behaviors are good or bad in and of themselves. Rather, they are examining the differences among needs, attitudes, and resource availability, and how these differences impacted and continue to impact our environment. This activity explores the rationale behind the behaviors of both the pioneers and the students toward natural resources.

Materials

For each team of four students:

- 1 Data Sheet
- 1 Coat of Arms Questions
- flip chart paper
- art supplies
- reference materials, optional

Pioneer Phoenicians and their successors probably did not see themselves as inconsiderate spoilers of the environment, nor did most of their contemporaries. Instead, the early settlers tended to act in ways consistent with the environmental circumstances and their cultural heritage. The luxury of taking water for granted did not occur in the Phoenix area until the arrival of the Modern-day Pioneers. Previous pioneers may have participated in activities that polluted or depleted our limited water supplies, but few wasted water as some modern-day residents do. We must all do what we can now to conserve the water we have.



Students will be provided with data on a particular group of settlers and will be asked to focus on their needs and desires. The students will identify cultural attitudes that might have influenced how the settlers met their needs, and what impact their actions had on the environment. Finally, they will answer questions comparing their findings with other teams, and decide how differing cultural attitudes can be reconciled with present and future environmental needs.

Procedure

1. Let students know that in teams, they will identify the needs of settlers to the Phoenix area sometime in the past. Settlers include: Hohokam, Pima, Spaniards, Trappers, Miners, Cowboys, Farmers, and Modern-day Pioneers. Based on information they have been given, other research, and their own opinions, students are to answer questions about the settlers and interpret their answers by drawing a coat of arms for their group of Pioneer Phoenicians.

2. Distribute a different Data Sheet to each of eight teams. Each team of settlers should answer the questions posed and use the art materials provided to explain their settlers' views in the appropriate area on the coat of arms. Emphasize that the quality of the art work does not matter. The drawings can be simple for they are merely symbols. What is important is that the students can explain what the pictures express.

3. Have each team share the coat of arms for their pioneer group, explaining the significance of the symbols. (A variation is to post the coats of arms and have a gallery tour, allowing the artists to interpret their work if others have questions.)

4. After all teams have reported, pose the following questions:
   a. Which group of pioneers had the greatest impact on the environment and on our water resources? Which group of pioneers had the least impact on the environment and water resources? Which group used the most water per capita? Encourage students representing identified pioneer groups to tell how their beliefs may have influenced their behavior.

   b. How would your pioneer group feel about the way in which other pioneers met their needs? What actions could your team suggest to future pioneers to lessen their impact on our resources while still meeting their needs? (For instance, if someone believes golfing is essential, is there a different way that activity can be undertaken while still keeping our resources in mind?)

   c. How do your attitudes toward water and other resources compare with those of these pioneers? What are the prevailing attitudes of current Phoenicians toward water? What practices, policies and traditions of the past are represented in the present behavior of Phoenicians?

   d. What behaviors can you adopt that will enable all water users to meet their needs, yet still have enough resources for future waves of pioneers and the needs of future generations? Can you make do with less water?

Extensions

Have students develop their own coat of arms representing their values toward water and the environment.

Evaluation

1. Select the one group that had the greatest impact on the natural resources, including water, in the Phoenix area. Tell the reasons for your choice.

2. Select the one group that had the smallest impact on the natural resources, including water, in the Phoenix area. Tell the reasons for your choice.

3. Make at least three comparisons between your needs and attitudes toward water and those of either miners or cowboys.

Resources

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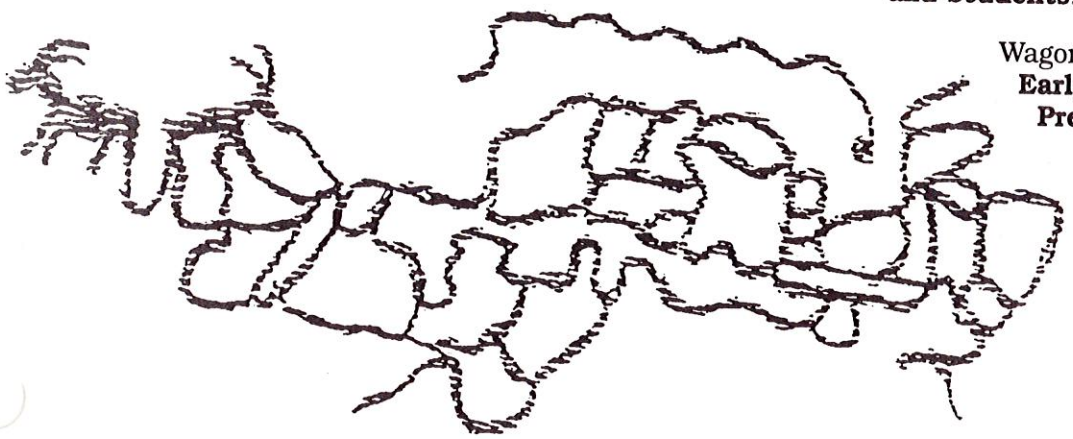
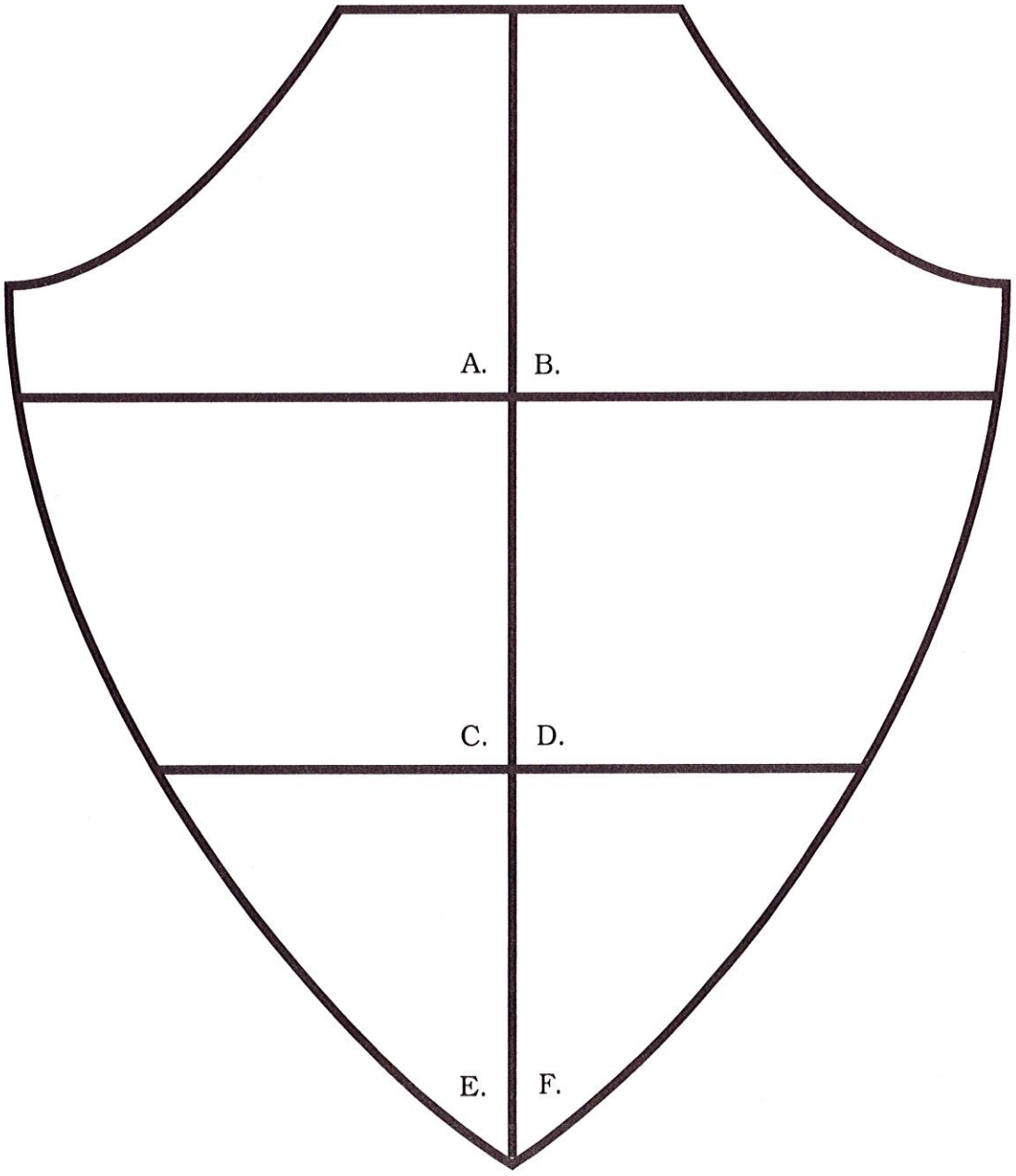


COAT OF ARMS

Directions: Use the art supplies provided to answer each of the following questions by drawing. The pictures, designs or symbols you make in the appropriate part of the coat of arms should show your teams' opinions of your pioneer group.

A. What attracted these pioneers to the Phoenix area?
B. What items did the pioneers bring for survival?
C. What did these pioneers consider to be basic needs or desires?
D. How did they meet these needs?
E. What did these pioneers think was the greatest obstacle to achieving their goals?
F. What impacts did these pioneers have on the environment, natural resources, and especially water?



DATA SHEETS

Native Americans: Hohokam

More than 2000 years ago (around 300 B.C.) the Hohokam settled in the Phoenix area. No one is sure why they came from present-day Mexico. Living long before horses were brought to North America, the Hohokam brought what they could carry. Much of what was needed came from the land. They built pithouses from mud and brush (at Casa Buena and throughout the valley), created pottery from clay, and cultivated corn (maize), squash, cotton, and beans. They also constructed crude, hand-dug irrigation canals, bringing water from the Salt, Agua Fria, Verde, San Pedro, and Gila Rivers to their fields. Each year's first crops were planted in March and watered at two to three-week intervals. The second crop was planted in late July when the summer monsoon rains began. The construction of more than 500 miles of main canals led to permanent settlements or towns. Some Hohokam communities built ball courts and temple mounds. The population was estimated to be 80,000, and nearly 20,000 along the Salt River Valley alone.

The Hohokam used more than 250 plant species from the desert, including mesquite, saguaro, yucca and agave. Hohokam traders imported copper bells and other items from what is now Central America, marine shells from the gulfs of California and Mexico, and turquoise from quarries in what is now New Mexico and California. After 1200 A.D., they formed caliche (a calcium carbonate rock that is readily available in Arizona) into mud adobe blocks. Around 1300 A.D. they built several huge three to four-story structures. One near the Gila River, known as Casa Grande or "big house," can still be seen. Although no one knows for sure, these large structures may have been built for religious purposes or for protection.

The Hohokam disappeared around 1450 A.D. No one knows why, but several theories exist. Perhaps because heavy winter rains and floods caused the canal system to become filled with silt, making farming impossible. Another theory is that the severe droughts between 1276 and 1299 caused most of the population to starve. Other archaeologists think their irrigation that caused the desert to be productive also brought problems like soil salt buildup that greatly limits the amount of food that can be grown.

In the Pima language, "Hohokam" means "those who have gone before" or "ancestors."

Native Americans: Pima

The Pima people call themselves the Achimoel O'Odham, "the river people." Once they lived along the Gila, Salt, and San Pedro Rivers. Some believe they are descendants of the Hohokam. Like the Hohokam, the Pima were good farmers who relied on irrigation to support a wide range of crops including cotton, squash, pumpkins, corn, beans, and even watermelons. The Pimas are related to the Hopi who have been in Arizona since before 1200 A.D. When they arrived in the Phoenix area is uncertain, but when the Spanish arrived in 1539, the Pimas were well settled as Phoenicians. Their population reached five thousand in the 17th century (1600s). They remained the predominant culture in Phoenix until the 1860s.

The O'Odham rain-bringing ceremony, "*Nawaid*" or New Year ritual, happened in late July or early August when a syrup made of the saguaro fruit was ready. The "giant cactus fruit harvest moon" is the first of the O'Odham's twelve month year. Men drank the liquor until they vomited "clouds." They believed the return of the holy liquid to the earth would bring rain clouds to the watershed of the river. The summer monsoons of the Sonoran Desert usually start by mid-July.

The Pimas welcomed first the Spanish, then Mexican, U.S., and European travelers with food, water, shelter, and protection (from the Apache and other enemies) for more than three hundred years. During the late 1800s, however, farming and ranching immigrants located upstream, especially along the Gila River, cutting off the water that made the Pima's farms productive for hundreds of years. The Pimas managed to survive the next hundred years marked by scarce water, stolen lands, the good and bad intentions of state and U.S. governments, legal battles, poverty, hunger and even starvation. Now the river people have regained many of their water rights and autonomy over some lands along the Gila and Salt Rivers.

DATA SHEETS

Trappers

The first U.S. citizens to arrive in Arizona were trappers. Their ancestors were primarily from the British Isles and northern Europe. Arizona was part of the Mexican state of Sonora when the trappers came in the 1820s and 1830s. Most came because beaver were becoming scarce in the northern states and Canada, because a great deal of money could be made by selling beaver pelts, and because the Mexican government was encouraging immigrants by offering licenses to trappers.

The Gila River was the path of entry, for most trappers were based in Santa Fe and Taos (in what is now New Mexico). From the Gila River, trappers spread to nearly every stream in Arizona, including the Salt and Verde Rivers. The mountain men were called nature's children for they "loved the outdoors, hated fences and restrictions, (and) respected grizzlies and rivers ". . . (Trimble, p. 82). They brought along guns, knives, mules and horses. Few in number, their visits to Arizona were often short and only occasional.

As the number of beavers diminished, some trappers led the Army Corps of Topographical Engineers on their surveys along the 32nd and 35th parallels during the 1850s. These paths became the trails that later pioneers followed.

Modern-day Immigrants

Most modern-day immigrants settled in the Phoenix area during the past fifty years. With the coming of the Arizona cooler (evaporative cooler) in the1930s and air conditioning in the 1950s, Arizona was no longer seen as a place to escape in the summer months. War-related industries moved to Arizona during World War II (1940s). They were attracted to the wonderful weather, lowcost labor, and low taxes. Aviation, electronics, and other defense-related industries thrived. By 1960, manufacturing became the state's number one income-producing industry.

Industry encouraged pioneers looking for employment opportunities. Some came for more favorable living conditions (warm climate, year-round recreational activities, and abundance of natural areas, parks and monuments). Others came for health reasons.

In 1940 Phoenix had a population of 65,000 in a 9.6-square-mile area and the state population was 500,000. In 1950 when Arizona had 750,000 residents, Phoenix had grown to 106,818 in 17 square miles. By the late 1980s Arizona's population was 3.5 million; Phoenix had nearly two million residents in a 400 square mile area! Arizona's population has doubled every 20 years since 1920. Over those fifty years, however, the Phoenix area has continued to get only 7" of rain each year.

Because they were such a diverse group, their attitudes were also diverse. Many still believed in the "Protestant Work Ethic" by which hard work and inventiveness will be rewarded. Others believed that our natural surroundings should be preserved for future generations and that our lives should be conducted with consideration for nature. Others believed the right to earn a living was most important, despite the impact on the environment. Still others believed they were entitled to enjoy their retirement, no matter the impact of any particular form of recreation on the environment.

Their needs were much greater than those preceding them. They still needed the basics such as food, water and shelter. But since their arrival, homes were built with extremely large energy and water requirements. Many added swimming pools and landscaped green lawns and vegetation similar to what they left behind in the northern and eastern U.S. and Canada. Hundreds of golf courses and elaborate systems of transportation were built to meet their needs. By the late 1980s they were consuming water at twice the replenishment rate, overdrafting groundwater supplies. Air quality was often in the unacceptable range. City and state laws now require water conservation by all Valley of the Sun water users. One of these laws mandates low-flow plumbing for all new buildings.

DATA SHEETS

Farmers

Large numbers of farmers or homesteaders began moving into Arizona in the 1860s after the Civil War. Many came from the U.S. or were immigrants from Europe. They competed with cattle ranchers for land, especially land in river valleys where water was. To be wealthy, they needed land they could own. Much more concerned with land laws than were miners or cowboys, farmers used their influence to protect their land and get more water for it. The Salt River Valley was the major farming area in territorial Arizona because abundant water was available.

Agriculture was the key to the growth of Phoenix, but it took an incredible amount of vision and hard work to make it happen. Most pioneer farmers brought wagons, guns, horses and other livestock, seeds, and a desire to tame or settle the wild southwest. They also brought a prevailing cultural attitude of the time, the "Protestant Work Ethic." They believed that work and improvements to nature were the pathways to a good society. If land was owned, improvements had to be made to it. If you could not make a good living or if you were poor, it was because you did not work hard enough. In 1857, Sylvester Mowry said: "The whole valley of the Gila, more than four hundred miles in length, can be made with proper exertion to yield plentiful crops."

The homesteaders cultivated the land, dug ditches to supply water from the Gila or Salt Rivers, and fenced in their improvements for their own use. Some farmers moved upstream from the farms of Native Americans and diverted the water they counted on for their crops. Often they planted crops that were familiar, despite their compatibility with the desert environment. Therefore, their needs for water resources were much greater than the needs of previous immigrants to the area.

By the 1880s Phoenix area farmers knew they badly needed a dependable water supply. This need led to the creation of canals and dams upstream throughout the Phoenix valley over the next one hundred years. With the help of the U.S. government, agriculture developed and paid for the water that allowed Phoenix to become what it is today. Agriculture also led the legal battles with other states over water rights, and fought for the Central Arizona Project (CAP). The canal started bringing water from the Colorado River to Phoenix in 1985.

However, even with all its positive aspects, there were negative impacts over time. Overplanting and growing non-native crops depleted water supplies. Reduced water tables and dams destroyed wildlife habitat. Unknowingly, poor irrigation practices and overuse of chemicals spoiled some land and water. Although Arizona is famous for providing lemons to North America in December, in 1990 agriculture used nearly 70% of Phoenix's water and employed 5% of its workers.

The Spanish

The first Spanish explorers and missionaries reached the Gila River by 1539. The most famous explorer, Francisco Vasquez de Coronado followed the meandering course of the San Pedro in February 1540. Because many Spanish did not plan to settle permanently, their needs were simple. They had the basic needs for food, water and shelter, and those needs they came to America to fulfill: religious converts and riches like gold, silver, and copper.

They brought the first European horses to the Old West. They also brought weapons (including lances and swords), armor, materials to make primitive shelters, wheat and other food, and their religious beliefs. The Spanish believed religion was the only way to salvation and the only way to establish a civilized society. A major goal was saving the lost souls of Native Americans. They also needed native people to work as farmers, miners and animal herders. Some native people, like the Pima, incorporated the religious practices into some of their own ancient ceremonies, adopted some Spanish words, and learned to care for animals and crops brought from Spain. Others, like the Apache, went to war against the intruders.

The Spanish obtained water from free-flowing rivers, learned to build shelters from adobe (using available mud and water), lived off native plants and animals, and traded for food from Native Americans. They dug large holes in the earth to take valuable ores and minerals, polluting some water supplies. They also left behind a code of water law, "first in time, first in right," which protected settlers from an upstream newcomer taking their water. The principle evolved into the Doctrine of Prior Appropriation, which is the basis of Arizona surface water law today.

DATA SHEETS

Cowboys

Arizona's first cowboy was the Jesuit priest, Eusebio Kino. He brought longhorn cattle, introducing ranching to the O'Odham people (both the Pima or Achimoel O'Odham and the Tohono O'Odham or Papago) in the late 1600s. In the "golden years" of the Spanish empire, 1790-1821, ranches of thousands of acres and hundreds of cattle dotted southern Arizona. These ranches were in ruins soon after the collapse of the Apache peace treaty.

Ranching resumed in the 1850s when the U.S. occupied Arizona, primarily to feed miners, soldiers, and other immigrants. "They lives in and loves the outdoors, hates fences and respects rivers." (Trimble, p. 150). Arizona cowboys were a multicultural mix of workers including runaway and former slaves, kids of northern European ancestry, and Mexican vaqueros. They learned quickly what really counted on the open range: the ability to work with horses and cattle, and how to handle a rope or lariat. Most were lost without their saddles, horses and wide-brimmed Stetsons or sombreros. The cowboys' hats "served as water pitchers for them and their horses, to fan fires, and it kept the dust, sun and rain off their heads." (p. 152) Cowboys drove cattle from large ranches in the Verde, San Pedro and other river valleys to the railroad where the cattle were shipped to Eastern packing houses.

The era of the cowboys who were home on the open range lasted only until the 1880s, barely thirty years. The cowboy image of the individual freedom in the outdoors, however, will likely live forever through movies. A series of long droughts and the practice of having more cattle than the range lands could support caused overgrazing that led to erosion, loss of vegetation, and oversilting of water sources. The rich valleys where grass had grown "stirrup-high" were destroyed. Thousands of cattle died and ranchers were forced to sell their lands. Homesteaders moved in, fencing ranges with barbed wire, digging water holes, erecting windmills, and introducing new breeds of cattle. The romantic days of the open range cowboy were gone.

Miners

Although the Spanish had mines in parts of southern Arizona nearly one hundred years before, it was not until the 1850s that miners began exploring nearly every square mile of Arizona searching for quick wealth from silver, gold, copper, and asbestos.

Sixty thousand miners and their families crossed the Gila Trail between 1849-51, most going to California for the gold rush. Most miners were from the U.S., Mexico, or northern Europe. Gold was discovered on the Gila River east of Yuma, in 1858. The population of Gila City was twelve hundred by 1861 when the "earth was turned inside out" and the town boasted everything but a church and a jail. Gila City was a ghost town in 1864. Men with mules quickly discovered Arizona's mineral wealth elsewhere: "If ya wash your face in the Hassayampa River, you can pan four ounces of gold dust from yer whiskers." (Trimble, p. 122)

After surface mining played out, hard rock miners hammered, chiseled and dug into mountains throughout the state. Even the Grand Canyon was disturbed by miners. Superior, near Phoenix and the state's single richest silver mine, was discovered in 1871. Copper was buried under the gold and silver deposits. In 1900, Arizona became the copper king of America. Near streams leading to the Gila River, miners established the towns of Clifton, Morenci and Globe.

Miners built ore crushers near rivers used to transport ore to market. Soon, railroads and roadways transported goods and people to and from the area. Some early gold and silver camps lasted less than a couple months. Some copper towns lasted as long as one hundred years, but in time all mines play out when no more ore can be taken out economically. Miners left holes in the ground, wooden and rusting metal ruins, and damaged water supplies throughout the state.