

INCAN ROADS AND BRIDGES

The Incas built one of the ancient world's best transportation systems. They built roads and bridges to keep the empire together. The transportation system allowed them to have fast communication between villages and cities. They also used it to move food and other supplies. The roads also allowed military troops to move faster.

The Incan roads stretched for more than 10,000 miles. The Incas had two major roads. The Royal Road was 3,250 miles long. It went from the northern border of the empire through Ecuador, Peru, and Bolivia into Argentina and Chile.

The other major road, the coastal highway, was 2,520 miles long. It ran from the village of Tumbes in the north, through the desert, then into Chile.

Several other roads ran between the two major ones. The standard width of the roads was 24 feet. They were narrower only when natural barriers were in the way. The roads included side walls to keep out sand drifts and to mark the road. There were also markers along the road to tell the distance to the next village.

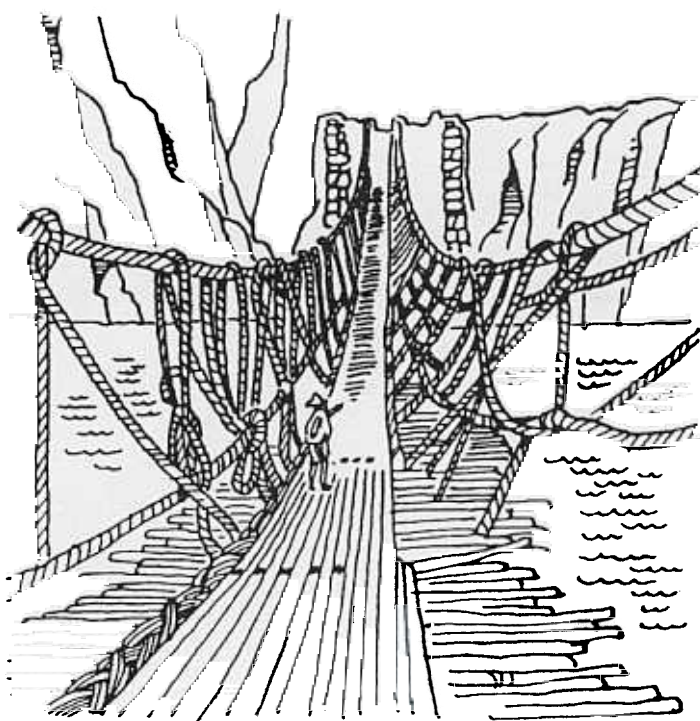
Incan workers provided the labor to build the roads as part of the "labor tax" they paid to the government. Government engineers directed the workers.

The roads belonged to the government. No one could use the road without special permission. The Incas did not use wheeled vehicles on their roads. The travelers and messengers walked to their destinations. The Incas used llamas to carry goods on the roads. They built rest houses called *tampus* about every 12 to 20 miles along the roads. In addition to providing a place to rest, most *tampus* also had food available.

The Incas built causeways to elevate the roads in swampy areas. They also built amazing bridges, which they called *chacas*. The hanging bridges are the most famous of the Incan *chacas*. One Incan bridge was over 250 feet long. Built in 1350, it lasted until 1890.

The Incas used the fibers of the maguey plant to weave the cable for the bridges. The main cables were from four to five feet thick. Incan workers had to replace the cables about every two years.

The Incas also built pontoon bridges made of reed boats tied together. Another type of Incan bridge had a basket hung from a cable stretched between two stone towers. Travelers got into the basket, and a workman then pulled along the cable to the other side.



The Apurimac Chaca, the hanging bridge over the Apurimac River in Peru, was one of the most famous of the Incan *chacas*. It is known as The Bridge of San Luis Rey in literature.

THE LLAMA: THE ANIMAL OF THE INCAS

The most important animal to the Incas was the llama. It was the only large native animal of the Western Hemisphere to be tamed. The horse and cow came to the Americas later. The Incas were the only people of South or Central America to use animals to help in their work.

The llama is a member of the camel family. It is about four feet tall at its shoulder and about four feet long plus a tail of about six inches. An adult llama can weigh up to 300 pounds. The llama has a slender body, long neck, and long thin legs. Its head is similar to that of a camel. It has large eyes and a pointed snout with a split nose. Its hooves have two toes.

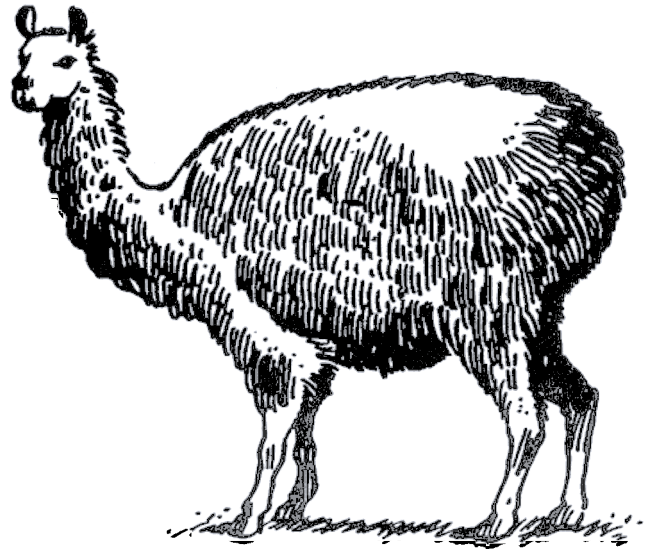
Although the llama does not have a hump like its cousin the camel, its body stores water well. The llama can travel great distances without needing water.

The Incas used llamas to carry food and trading goods throughout the empire. The animal is well suited to the rugged mountains of the Andes. It also adapts well to high altitudes. The llama can carry loads of about 100 to 130 pounds and can easily travel six to 12 miles per day over uneven ground. On flat ground it can travel 20 to 25 miles in one day. The llama can even run faster than a horse when necessary.

The llama was, and still is, a source of wool. Its wool is thick and greasy and comes in a variety of colors. The Incas used llama wool to make blankets, ropes, and sacks to carry goods. They tanned the hide of the llama to make leather. Many Incas used this leather to make sandals.

The llama was also a source of food. The Incas dried llama meat in the heat of the Sun. *Charqui* is the Incan name for dried llama meat. Our word "jerky" comes from the Incan word *charqui*.

Today the llama is still an important animal in the Andes Mountains. The descendants of the ancient Incas use the llama in much the same way as their ancestors did.



The llama was used as a pack animal by the Incas, and it was also a source of wool, leather, and meat.

THE INCAS

The early history of the Incas is a mystery. Since the Incas never developed a system of writing, we must rely on the writings of their Spanish conquerors for any Incan history that we know. We can also study artifacts of the ancient cities for clues to the early Incas' story.

We do know some Incan myths. One early story is that the sun god created the first Incan, Manco Capac, and his sister. The god told them to go and teach other Indians. They went into the wilderness to establish a city. They named their city Cuzco, and it became the capital of the Incan empire.

The Incas probably began as one of many small tribes in the Andes Mountains. At its peak, the Incan empire spread through parts of what are now Peru, Ecuador, Chile, Bolivia, and Argentina. The Incan land included desert, fertile valleys, some rain forests, and the Andes Mountains.

The Incas conquered most of their territory under the leadership of Pachacutec, who ruled from 1438 to 1471. The Incas crushed most of the other tribes during brutal fighting.

The Incan empire was so large that they built a system of roads that stretched over 12,000 miles. The Incas did not use wheeled vehicles on their roads. The great road system was for pedestrians. Only the road system of the ancient Romans was equal to that of the Incas.

The Incas developed terrace farming. They cut terraces into the steep sides of the mountains to create more farm land. They also dug irrigation systems to bring water from the mountain streams to the terraces. Many of the Incan roads, terraces, and irrigation ditches are still in use today.

The llama was an important animal for the Incas. They tamed the llama and used it for transportation of men and materials. The llama also provided the Incas with wool and food.

The Incas developed a counting system that used a based of ten. They used a *quipus* to remember numbers. The quipus had a main cord about two feet long. They tied many colored strings to the main cord. Each string had knots tied in it. The color of the strings and the distance between the knots had special meanings.

The Incan civilization was at its peak when the Spanish arrived. Francisco Pizarro led the Spanish invaders against the Incas. After a series of fierce battles, the Spanish defeated the Incan king, Atahualpa, and in 1533 he was killed. The descendants of the Incas, like those of the Mayas and Aztecs, continued to live under the rule of the Spanish.



The Incas conquered a vast empire in South America, constructed a 12,000-mile road system, and developed terrace farming and irrigation systems.

INCAN AGRICULTURE

Many of the foods we use today were also part of the Incan diet. Incan farmers grew a greater variety of crops than any other ancient American tribe. They grew potatoes, corn, tomatoes, avocados, peppers, strawberries, peanuts, cashews, squash, beans, pineapples, chocolate, and other crops.

The potato was the most important food of the Incas. They called it *papa*. The Incas had many varieties and colors of potatoes, and today we know of 40 of those varieties. The potato became the main source of food for the Incas since they could plant it at great heights in the Andes Mountains. Some of the varieties of potato would also resist the frosts of the region.

The Incas used the first known freeze-dried process. They left the potatoes outside to freeze. Then the Incas trampled the potatoes by foot to squeeze the water out of them. Next they left them in the sunlight to dry. The Incas called these dried potatoes *chuñu*. The Incas preserved *chuñu* either whole or ground into flour. *Chuñu* would last for years without spoiling and was easy to store. The Incas were able to eat it throughout the year.

Corn was another important Incan crop. The Incas planted over 20 varieties of corn. Corn is called maize by many Indian tribes. The Incas named it *sara*. Corn was grown only in the lower regions.

The mountains presented farmers with special challenges. To create enough flat land for the crops, the Incas carved flat step-like terraces into the mountain sides. The terraces also helped to keep the soil from being eroded. Modern Andes farmers still use many of the ancient Incan terraces.

Planting the crops was a group effort. The men would break up the soil with planting sticks. The women then followed, putting the seeds into the earth. The children often worked in the fields to scare away birds and animals that might eat the crops before the harvest.

The Incas also developed a system to carry the water of the mountain streams to the terraces. They dug canals and tunnels and built raised aqueducts to carry the water. The Incan water system is still in use today.

Farming was the subject of many Incan religious ceremonies. After the planting season, the Incas made sacrifices to the rain god. At another major festival, the Incas thanked the gods for a good harvest.



Using step-like terraces carved into the mountain sides, the Incas created more flat land for crops. The terraces, which are still used today, also helped control soil erosion.

CITIES OF THE INCAS

The Incas were master builders. They had the best planned cities in the ancient Americas. Planners laid out the cities in a grid. Each city had a central plaza, with the major temples and public buildings surrounding it. The center of each city included temples, a palace for the visiting Inca, and housing for the priests and nobles. Houses for the common people surrounded the central area.



Incan architects used trapezoidal openings for the doors and windows in their buildings. The buildings were made of huge cut and polished stones set perfectly in place.

A wall that was 50 feet high encircled the city of Chimú. However, most Incan cities did not have walls around them. The Incas built large stone fortresses near the city. The citizens would gather inside the fortress in time of danger.

Incan buildings remain among the most amazing ever built. The Incas used huge blocks of stone. One stone measured 36 x 18 x 6 feet. They cut and polished each stone with small stone tools and then moved each stone into the proper place. The stones fit together perfectly, so the builders did not need to use cement to keep them in place. Even today, a knife blade cannot fit into the cracks between the stones of the ancient buildings.

The Incas used trapezoidal openings for all of their doors and windows. The four-sided openings were smaller at the top than at the bottom. The Incas did not decorate the outside of their buildings, but they made beautiful decorations for the insides of the palaces and temples. They often used solid gold for these decorations.

The two most famous Incan cities are Cuzco and Machu Picchu. Incan legend says that the first Incan ruler founded Cuzco. This happened in about A.D. 1100. Cuzco soon became capital of the entire empire. It is in a mountain valley about 11,000 feet above sea level. Two rivers flowed into the valley to supply water.

Wars and invaders destroyed the ancient city. In 1400 Cuzco was rebuilt. The new city had two large plazas, the Inca's palace, the Sun Temple, and other temples and government buildings.

The best preserved Incan city is Machu Picchu. Explorers rediscovered it in 1911. Its ruins include temples, palaces, military buildings, and common houses. The Incas of Machu Picchu built terraces for farming. They also had a stone aqueduct to bring in water from a mile away.

INCAN RELIGION

Like the other Indian tribes, the Incas worshipped many gods and goddesses. The major Incan god was the god of nature, Viracocha, the creator.

Another Incan god was Inti, the sun god. Gold was the symbol of Inti. The sun god temple is the most important structure in Cuzco, the major city of the Incas. The Incas believed Inti was the father of Incan rulers. They worshipped the ruler as a living god.

Major Incan goddesses included those of the earth and the sea. The Incas also worshipped many lesser gods and goddesses. These included gods of thunder, the Moon, stars, rainbows, and others.

The Incas believed they could learn the will of the gods by divining. Divining is studying objects to find magic signs. Priests would look at things such as animal organs, flames of a fire, or movements of animals, and from these they would try to discover if it was a good day for planting crops, going to war, or making other important decisions.

In addition to the gods and goddesses, the Incas worshipped *huacas*. A huaca was a sacred place or thing. Huacas included mummies of the dead, temples, holy places, and things of nature such as mountains, springs, and stones. Each Incan family had small statues in their homes of huacas. The statues were sacred to that family.

Religious ceremonies were an important part of Incan life. Each family had daily prayers to their huacas. The priests performed daily ceremonies at the various temples. The high priest was a favorite relative of the ruler.

The Incas held a major religious festival during each of the 12 months of their calendar. The Incan year began in December with the Capac Raimi. This means "the magnificent festival." This was the most important and elaborate of all celebrations. Pauca Huaray, in March, celebrated the ripening of the earth. The June ceremony of Inti Raimi was the festival of the Sun. Uma Raimi, the festival of the water, occurred in October.

Some rituals happened inside the temples. The great monthly festivals occurred outdoors. All of the people could take part in them. The celebrations included dancing, feasts, games, songs, and parades. The ceremonies also included sacrifices and offerings. Incas sacrificed animals such as the llama and guinea pigs. At times human sacrifices, including child sacrifices, were part of the rituals.



Winged attendants of the thunder god are shown in profile rather than full face. The figures have rayed headdresses and carry staffs.