Sericulture, or silk production, has a long and colorful history unknown to most people. For centuries the West knew little about silk and the people who made it. Pliny, the Roman historian, wrote in his Natural History in 70 BC "Silk was obtained by removing the down from the leaves with the help of water…". For more than two thousand years the Chinese kept the secret of silk altogether to themselves. It was the most zealously guarded secret in history.

**ORIGIN OF SILK - LEGEND OF LADY HSI-LING-SHIH**

Chinese legend gives the title Goddess of Silk to Lady Hsi-Ling-Shih, wife of the mythical Yellow Emperor, who was said to have ruled China in about 3000 BC. She is credited with the introduction of silkworm rearing and the invention of the loom. Half a silkworm cocoon unearthed in 1927 from the loess soil astride the Yellow River in Shanxi Province, in northern China, has been dated between 2600 and 2300 BC. Another example is a group of ribbons, threads and woven fragments, dated about 3000 BC, and found at Qianshanyang in Zhejiang province. More recent archeological finds - a small ivory cup carved with a silkworm design and thought to be between 6000 and 7000 years old, and spinning tools, silk thread and fabric fragments from sites along the lower Yangzi River – reveal the origins of sericulture to be even earlier.

**SILKWORM AND THE FAMILY**

There are many indigenous varieties of wild silk moths found in a number of different countries. The key to understanding the great mystery and magic of silk, and China's domination of its production and promotion, lies with one species: the blind, flightless moth, Bombyx mori. It lays 500 or more eggs in four to six days and dies soon after. The eggs are like pinpoints – one hundred of them weigh only one gram. From one ounce of eggs come about 30,000 worms which eat a ton of mulberry leaves and produce twelve pounds of raw silk. The original wild ancestor of this cultivated species is believed to be Bombyx mandarina Moore, a silk moth living on the white mulberry tree and unique to China. The silkworm of this particular moth produces a thread whose filament is smoother, finer and rounder than that of other silk moths. Over thousands of years, during which the Chinese practiced sericulture utilizing all the different types of silk moths known to them, Bombyx mori evolved into the specialized silk producer it is today; a moth which has lost its power to fly, only capable of mating and producing eggs for the next generation of silk producers.

**THE SECRET OF SERICULTURE**

Producing silk is a lengthy process and demands constant close attention. To produce high quality silk, there are two conditions which need to be fulfilled – preventing the moth from hatching out and perfecting the diet on which the silkworms should feed. Chinese developed secret ways for both.

\* The eggs must be kept at 65 degrees F, increasing gradually to 77 degrees at which point they hatch. After the eggs hatch, the baby worms feed day and night every half hour on fresh, hand-picked and chopped mulberry leaves until they are very fat. Also a fixed temperature has to be maintained throughout. Thousands of feeding worms are kept on trays that are stacked one on top of another. A roomful of munching worms sounds like heavy rain falling on the roof. The newly hatched silkworm multiplies its weight 10,000 times within a month, changing color and shedding its whitish-gray skin several times.

\*The silkworms feed until they have stored up enough energy to enter the cocoon stage. While they are growing they have to be protected from loud noises, drafts, strong smells such as those of fish and meat and even the odor of sweat. When it is time to build their cocoons, the worms produce a jelly-like substance in their silk glands, which hardens when it comes into contact with air. Silkworms spend three or four days spinning a cocoon around themselves until they look like puffy, white balls.

\*After eight or nine days in a warm, dry place the cocoons are ready to be unwound. First they are steamed or baked to kill the worms, or pupas. The cocoons are then dipped into hot water to loosen the tightly woven filaments. These filaments are unwound onto a spool. Each cocoon is made up of a filament between 600 and 900 meters long! Between five and eight of these super-fine filaments are twisted together to make one thread.

\*Finally the silk threads are woven into cloth or used for embroidery work. Clothes made from silk are not only beautiful and lightweight, they are also warm in cool weather and cool in hot weather.

Literary sources such as The Book of History, and The Book of Rites give further information about sericulture. Reeling silk and spinning were always considered household duties for women, while weaving and embroidery were carried out in workshops as well as the home. In every silk-producing province the daughters, mothers and grandmothers of every family devoted a large part of the day for six months in a year to the feeding, tending and supervision of silkworms and to the unraveling, spinning, weaving, dyeing and embroidering of silk. By the fifth century BC, at least six Chinese provinces were producing silk. Each spring, the empress herself inaugurated the silk-raising season, for silk production was the work of women all over China. The technique and process of sericulture were guarded secrets and closely controlled by Chinese authorities. Anyone who revealed the secrets or smuggled the silkworm eggs or cocoons outside of China would be punished by death.

**SILK DEVELOPMENT IN CHINA**

When silk was first discovered, it was reserved exclusively for the use of the ruler. It was permitted only to the emperor, his close relations and the very highest of his dignitaries. Within the palace, the emperor is believed to have worn a robe of white silk; outside, he, his principal wife, and the heir to the throne wore yellow, the color of the earth.

Gradually the various classes of society began wearing tunics of silk, and silk came into more general use. As well as being used for clothing and decoration, silk was quite quickly put to industrial use by the Chinese. This was something which happened in the West only in modern times. Silk, indeed, rapidly became one of the principal elements of the Chinese economy. Silk was used for musical instruments, fishing-lines, bowstrings, bonds of all kinds, and even rag paper, the word's first luxury paper. Eventually even the common people were able to wear garments of silk.

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During the Han Dynasty, silk ceased to be a mere industrial material and became an absolute value in itself. Farmers paid their taxes in grain and silk. Silk began to be used for paying civil servants and rewarding subjects for outstanding services. Values were calculated in lengths of silk as they had been calculated in pounds of gold. Before long it was to become a currency used in trade with foreign countries. This use of silk continued during the Tang as well. It is possible that this added importance was the result of a major increase in production. It found its way so thoroughly into the Chinese language that 230 of the 5,000 most common characters of the mandarin "alphabet" have silk as their "key".

**A SECRET OUT TO THE WORLD**

In spite of their secrecy, however, the Chinese were destined to lose their monopoly on silk production. Sericulture reached Korea around 200 BC, when waves of Chinese immigrants arrived there. Silk reached the West through a number of different channels. Shortly after AD 300, sericulture traveled westward and the cultivation of the silkworm was established in India.

It is also said that in AD 440, a prince of Khotan ( today's Hetian)--a kingdom on the rim of Taklamakan desert

-- courted and won a Chinese princess. The princess smuggled out silkworm eggs by hiding them in her voluminous hairpiece.

This was scant solace to the silk-hungry people of the West, for Khotan kept the secret too. Why share it with the westerners and kill a good market?

Then around AD 550, two Nestorian monks appeared at the Byzantine Emperor Justinian's court with silkworm eggs hid in their hollow bamboo staves. Under their supervision the eggs hatched into worms, and the worms spun cocoons. Byzantium was in the silk business at last. The Byzantine church and state created imperial workshops, monopolizing production and keeping the secret to themselves. This allowed a silk industry to be established in the Middle East, undercutting the market for ordinary-grade Chinese silk. However high-quality silk textiles, woven in China especially for the Middle Eastern market, continued to bring high prices in the West, and trade along the Silk Road therefore continued as before. By the sixth century the Persians, too, had mastered the art of silk weaving, developing their own rich patterns and techniques. It was only in the 13th century—the time of the Second Crusades—that Italy began silk production with the introduction of 2000 skilled silk weavers from Constantinople. Eventually silk production became widespread in Europe.

**SILK AND ITS TRADE**

Silk became a precious commodity highly sought by other countries at a very early time, and it is believed that the silk trade was actually started before the Silk Road was officially opened in the second century BC. An Egyptian female mummy with silk has been discovered in the village of Deir el Medina near Thebes and the Valley of the Kings, dated 1070 BC, which is probably the earliest evidence of the silk trade. During the second century BC, the Chinese emperor, Han Wu Di's ambassadors traveled as far west as Persia and Mesopotamia, bearing gifts including silks. A Han embassy reached Baghdad in AD 97, and important finds of Han silks have been made along the Silk Road. One of the most dramatic finds of Tang silks along the Silk Road was made in 1907 by Aurel Stein. Some time around 1015, Buddhist monks, possibly alarmed by the threat of invasion by a Tibetan people, the Tanguts, sealed more than ten thousand manuscripts and silk paintings, silk banners, and textiles into a room at the Caves of the Thousand Buddhas near Dunhuang, a station on the Silk Road in north-west Gansu.

From about the fourth century BC, the Greeks and Romans began talking of Seres, the Kingdom of Silk. Some historians believe the first Romans to set eyes upon the fabulous fabric were the legions of Marcus Licinius Crassus, Governor of Syria. At the fateful battle of Carrhae near the Euphrates River in 53 BC, the soldiers were so startled by the bright silken banners of the Parthian troops that they fled in panic. Within decades Chinese silks became widely worn by the rich and noble families of Rome. The Roman Emperor Heliogabalus (AD 218 - 222) wore nothing but silk. By 380 AD, Marcellinus Ammianus reported, "The use of silk which was once confined to the nobility has now spread to all classes without distinction, even to the lowest." The craving of silk continued to increase over the centuries. The price of silk was very hight in Rome. The best Chinese bark ( a particular kind of silk) cost as much as 300 denarii (a Roman soldier's salary for an entire year!). Many sources quote that Roman citizens' demand for imported silks was so great as to be damaging to the Roman economy.

Silk was even beginning to have a civilizing effect on the barbarians. In 408 AD when Alaric, a Goth, besieged Rome, his price for sparing the city included 5000 pounds of gold, 3000 pounds of pepper, 30,000 pounds of silver and 4000 tunics of silk.

**SILK TODAY**

World silk production has approximately doubled during the last 30 years in spite of man-made fibers replacing silk for some uses. China and Japan during this period have been the two main producers, together manufacturing more than 50% of the world production each year. During the late 1970's China, the country that first developed sericulture thousands years ago dramatically increased its silk production and has again become the world's leading producer of silk.