

# The Land of Silk.

Travels in Chekiang, the Richest Silk Region of Asia.

FRANK G. CARPENTER.

CHEKIANG, China. This is written in the heart of the silk regions of China. For a week I have been floating along through one canal after another with Consul General Goodnow in his launch boat through a country which is one vast orchard of mulberry trees. There are thousands of these trees on every side of me as I write, and by getting off on the bank and climbing to the top of one of the bridges which arch the canal at every few miles I can see trees by the millions, extending on and on until they cut the horizon. They border the waterways and are only broken here and there by clumps of peach trees or the taller shade trees of some farm village and the pit-like fields needed for raising rice.

## THE CHIEF SILK PROVINCE OF ASIA.

Silk is produced in almost every part of China, but Chekiang produces more and better silk than any other. It raises vast quantities of cocoons every year for export to France, Germany and Japan, and bales of raw silk go from here to our factories in the United States. There are thousands of farm houses in which silk reeling is done, and great silk filatures with the finest modern machinery put up by the French, English and other foreigners, as well as by the Chinese, to turn the cocoons into thread. The Chinese use more silk themselves than any other people; they have tens of thousands of looms, and their silk millionaires are numbered by scores.

## AMONG THE MULBERRY TREES.

I wish you could be with me in this ride through the mulberry orchards. Our mulberry tree grows about as big as an elm, and is not out of place among the trees of the forest. The mulberry trees here are small. Most of them are trimmed down to four feet, the sprouts being cut off year after year. The orchards look more like thickets than forests, and the trees are seldom larger than a three-year-old peach tree. They are as knotty and gnarled as an olive tree and as ragged as a quince bush. They are planted in rows only a few feet apart and so carefully cultivated that not a weed is to be seen anywhere. Here and there garden stuff is raised between the trees, but nothing grows close to the trunk, and a continual fertilizing and hoeing goes on the year around. All kinds of manure are used, but the chief fertilizer comes from the canals which are fed by the Yangtze river. The Yangtze Kiang is as full of silt as the Nile. It brings down vast quantities of rich mud every year, and drops them into the canals. The Chinese dredge this out, and spread it over the ground. They scoop it up in nets or in canvas bags with heavy iron rings about them. They have great long-made bamboo poles with spoon-like baskets on the ends, looking like the world like giant sugar tongs, with which they pinch up a quart of mud at a time and pull it into their boats. Later on they throw it on the banks and spread it around the trees, covering the whole surface of the ground. The Chinese save every bit of fertilizing material, even to their hair cuttings and their nail parings. I see the children everywhere going around and picking up filthy stuff of all kinds to add to the manure heaps.

## HOW THE COUNTRY LOOKS.

I frequently get out and walk through the orchards. There are no roads anywhere. You could not possibly ride over the country in a cart, for many of the roads are made at different levels so that they may be flooded from time to time as the crops demand. There are only footpaths between the fields, and these wind about, going this way and that without regard to distance. The only highways are the canals, which are filled with traffic even in the country roads of our rich farming districts are filled with wagons.

## HOW MULBERRY TREES ARE GROWN.

Through an interpreter I have learned how mulberry trees are grown. The seeds are first planted in nurseries and

Among the Mulberry Trees—How Silk Worms Are Reared—How Cocoons Are Raised and Sold—The Enormous Capital Required—Big Filatures Run by Modern Machinery—Factory Girls Who Work for Three Cents a Day.

when the sprouts have reached several feet in height they are transplanted to six feet apart in regular rows. This is done in December. After this the trees are carefully cared for. They are pruned year after year, and never allowed to grow more than 6 feet in height. The cutting does not injure them. A sound mulberry tree will last for fifty years, and when fully matured will annually yield as much as 100 pounds of leaves. In some parts of Chekiang the seeds of the wild mulberry are sown and the young sprouts grafted on the cultivated mulberry. This is thought to produce better leaves.

The trees have to be carefully watched for insects. There are silk tree borers much like our peach tree borers, worms which can enter the bark and must be dug out, and there are insects which eat the leaves and must be killed by fumigating or spraying.

## REARING SILK WORMS.

I have been interested in learning how the Chinese rear silk worms. They have reduced the business to a science, and it is still so important that the empress starts it every year. Indeed the first silk worms of China were reared by an empress. This was the wife of Hwang-ti, who lived 2600 B. C., and who is known as the goddess of silk. The present empress sacrifices to her every April in the palace grounds. April is the best time for hatching silk eggs, and it is at this time that the moths are started laying. The Chinese call the male moths from the female ones while they are still in the cocoons. They know just how to handle them at the proper time. In some places the eggs are laid on clean grass cloth, in others on white linen or

One moth will lay as many as 500 eggs. This job takes her seventy-four hours, after which she lives five or six days without eating and then dies. It is important to have good eggs, and the strongest cocoons are chosen for the purpose. The eggs are first washed and then sprinkled with salt. They are next covered with ashes of burnt mulberry leaves, and so kept for ten days, after which time they are ready for hatching.

## A CURIOUS CHINESE INCUBATOR.

In many silk districts the people have human incubators. The warmth of the body furnishes the heat, the most approved variety being a lady sitting inside her husband's clothes upon her bare bosom and keeping the eggs warm by their body heat. The silk worms are as fine as a thread and black when first hatched. The hatching usually takes place between 8 o'clock in the morning and noon. In other places the eggs are hatched in warm chambers and in other ways.

The first silk eggs taken to Europe were carried to Constantinople in bamboo tubes and hatched in a manure heap. In the hatching rooms and also in those where the hatched worms are kept the temperature is not tested by a thermometer but by a man who takes off his clothes and goes in naked in order to tell by the sensations produced upon his body as to the temperature and moisture.

## AS DELICATE AS BABIES.

The Chinese save every bit of fertilizing material, even to their hair cuttings and their nail parings. I see the children everywhere going around and picking up filthy stuff of all kinds to add to the manure heaps.

After this the silk worm takes no more food and begins to spin from its mouth, first fastening the thread to a frame on which it is placed. It moves its head from one side to the other

straw placed on mats on platforms as high as your waist. The worms crawl up on the straw and fasten themselves to it and there spin their cocoons. About 100 worms are

In this water until the thread ends become loosened, and then several of these ends are joined together and the cocoons reeled off on rude reels worked by hand. If one of the threads breaks it is joined together or replaced by another. It requires considerable skill to do the reeling, for the thread when completed must be of equal thickness and brightness. A good reeler can make about twenty-six ounces of fine silk in a day.

## WEAVING SILK.

The weaving, as done by the natives outside the factories, is on machinery of the rudest description. Everything goes by hand, from ribbons to velvets and fine brocades. I see women and girls making ribbons in all the cities of this region, and in some places find them weaving satins and velvets. At Nanking I went through the imperial looms which weave satins and velvets for the emperor, the empress dowager and the court. They make about 200,000 pieces there every year, or silk to the value of about \$2,000,000. It is impossible to buy the goods except in an underground way, for all of it is supposed to go to the imperial household. The wages of the weavers are about 20

from Europe, and their business runs high into the millions of dollars. There are twenty-five such filatures in Shanghai alone, employing, all told, more than 20,000 hands. There are some in Hangchow, Soochow and at other places in the silk regions.

Most of these filatures are owned and operated by Chinese, although five at Shanghai have foreign managers. It was through the introduction of Mr. Siva, a French proprietor of one of the Shanghai establishments, that I was able to go through the Chinese filature at Soochow. This filature has a brick building covering about five acres. It employs 800 hands, and its capital must be at least a half million dollars. The Chinese heads of the establishment who took me through the filature were tall, portly, fine-looking men, dressed in silk brocades which would have made fine gowns for any White House reception. They spoke English well, and were thoroughly posted on the silk markets of the world. We first entered the basement, where a number of English steam engines were supplying the power, and then mounted to the second floor, and were taken through a number of large rooms, filled with little white balls covered with a soft, silky fuzz. Each ball was about as big as the largest peanut. These were the cocoons as they had come in from the country. They had been baked in ovens, and the worms inside them were cooked hard. I picked up a handful and shook them. They felt like peanuts, and the little baked worms rattled like kernels inside the shells.

## CHINESE FACTORY GIRLS.

Leaving this department we went into the factory proper, a great room which was humming like a cotton mill. It was 500 feet long and 75 feet wide, and was filled with machinery. In it 700 women and girls were reeling silk. They were working at the machines, which ran in rows from one end of the room to

the other. Some of the women were sitting at pans of steaming hot water in which the silk cocoons bobbed about, as though they were alive, while thin threads of fine white silk were pulled from them by the moving reels above. As I looked into the pans I could see the cocoons dancing about in the steam in blocks of five, and that each woman started a new thread, from time to time, by pulling a cobweb strand from each one of five different cocoons and twisting them into one. This was then fastened to the reel so they had to unwind the five cocoons at once, twisting their threads together into one before it was wound. Different numbers of strands are used to make the different kinds of silk thread. Five strands make the finest thread. The kind of thread that we import for the United States usually contains six, eight or ten strands.

Before the cocoons are unwound the threads are loosened by soaking the cocoons in hot water. This is done in bowls in front of the reeling machines, the cocoons being stirred about with little brushes of bamboo by Chinese girls from eight to thirty years of age. When the threads become loosened they can easily be picked up.

## WORKING AT THREE CENTS A DAY.

Some of these little children work at 3 cents a day, and some of the women only get as much as 5 cents of our money. The best of the little ones receive 12 cents, and the highest paid woman of the whole factory was getting 35 cents a day. This was for thirteen hours and for seven days of the week.

Notwithstanding these low wages, I noticed that women and children appeared happy and well dressed. Many of the girls wore jewelry and some of the prettiest hands that wound the cocoons about in the water had silver or gold bracelets on the slender wrists above them.

# GREAT MAIL ROUTE.

Advantages of Transamerica Line From Australia—The Story of an Interesting Test Made to Compare The Merits of This With the Suez System—Melbourne To London in Thirty-one Days.

## Special Correspondence.

San Francisco, Feb. 3.—In this city it is deemed altogether likely that the British government, when awarding the contract that is about to be made for handling the mail to and from Australia, will adopt an American route, for two tests of shipping Australian mails to London eastward via the United States have shown the British postal authorities that with American methods in full working order 15,676 miles can be covered in from three to five days less than British steamers can make it sailing westward.

The last contract made by the postal authorities of Great Britain for carrying Australian mails was for \$2,102,576 and called for what is known as the Suez route. This has not proved as satisfactory as desired, chiefly owing to the frequency of storms in the Indian ocean. Great delays are thus experienced by steamers, and it sometimes takes forty days to make the trip between the colony and the mother country.

Natural the officials were anxious to learn if there were no more feasible mail route, and the indications are that they have found one by way of this city and New York.

The story of the last test is an interesting one and is another proof of the supremacy of American business methods. The start was made from Melbourne, Victoria, where the London mail had been collected. It was loaded on a Pacific liner on the morning of Nov. 4 and was at once started for Sydney, New South Wales, a run of 516 miles, arriving there on the afternoon of the next day. This was the last Australian point touched by the steamer, which at once cleared for Auckland, in the New Zealand islands, 1,720 miles away, arriving Nov. 9.

Pango-Pango, 1,290 miles away, is due north. It was reached in three days, the steamer touching there on Nov. 13. The Samoan islands were left behind on the same day, and seven days later, or on the morning of Nov. 20, the ship was at the docks of Honolulu, having covered 3,610 miles on the run from Pango-Pango.

There was no delay at the Hawaiian Islands, and the same evening the steamer started for San Francisco, 2,100 miles away. Early on the morning of Nov. 25 the big liner passed through the Golden Gate and to a Frisco dock. In a trice the mail was tumbled into the United States mail wagons and driven at top speed to the Southern Pacific station. A special express and mail train had been made up and was ready for the great dash across the continent.

Then began the most difficult part of the undertaking. Ogden was 333 miles away, and it had been ordered that the mail sacks should be there in twenty-six hours for delivery to the Union Pacific railway. Now, the slowest stage of a transcontinental journey to or from Frisco lies between Ogden and this city. Speed is a rare article on that stretch, but this time speed was imperative.

The Southern Pacific people had told the authorities in Washington that the sacks would be in Ogden in the afternoon of Nov. 27, and they had to be there, for it was a test of the commercial prowess of the United States, and Great Britain was the judge.

The best engine on the division was saved for the run, and soon as the mailbags were tumbled into the cars on Nov. 26 the special pulled out of the station. At 3 o'clock the next afternoon the mail was handed over to the Union Pacific Railroad company, which had been selected to carry it to Omaha, a run of 1,010 miles.

On the afternoon of Nov. 28 the sacks were thrown into a Burlington car, and in fifteen minutes the fastest train on that road had started for Chicago, where it arrived shortly before 3 o'clock on the morning of Nov. 30.

Seven hours were necessary to cover the 400 miles to Buffalo. There the car was switched on to the tracks of the New York Central and whirled over the remaining 400 miles to New York, reaching there just before 1 o'clock on the morning of Nov. 30.

714, 354 miles between New York and Southampton are covered by the ocean greyhounds in five and a half days. This meant that the mail would be on the British soil on the evening of Dec. 4. The Great Northern railway carried it over the 320 miles to London, in less than thirty-one days from the time it left Melbourne, having traveled a total distance of 15,676 miles.

## HERR KRUPP'S BIG INCOME.

Steel and Gun Manufacturer Stands at Head of Germany's Richest Men.

Herr Krupp, more than \$5,000,000  
Herr von Thiele-Winckler 1,500,000  
Sixty-five persons 280,000  
2,774 persons 25,000

3,823 persons in United States have incomes of \$50,000  
John D. Rockefeller, United States, estimated income, 20,000,000

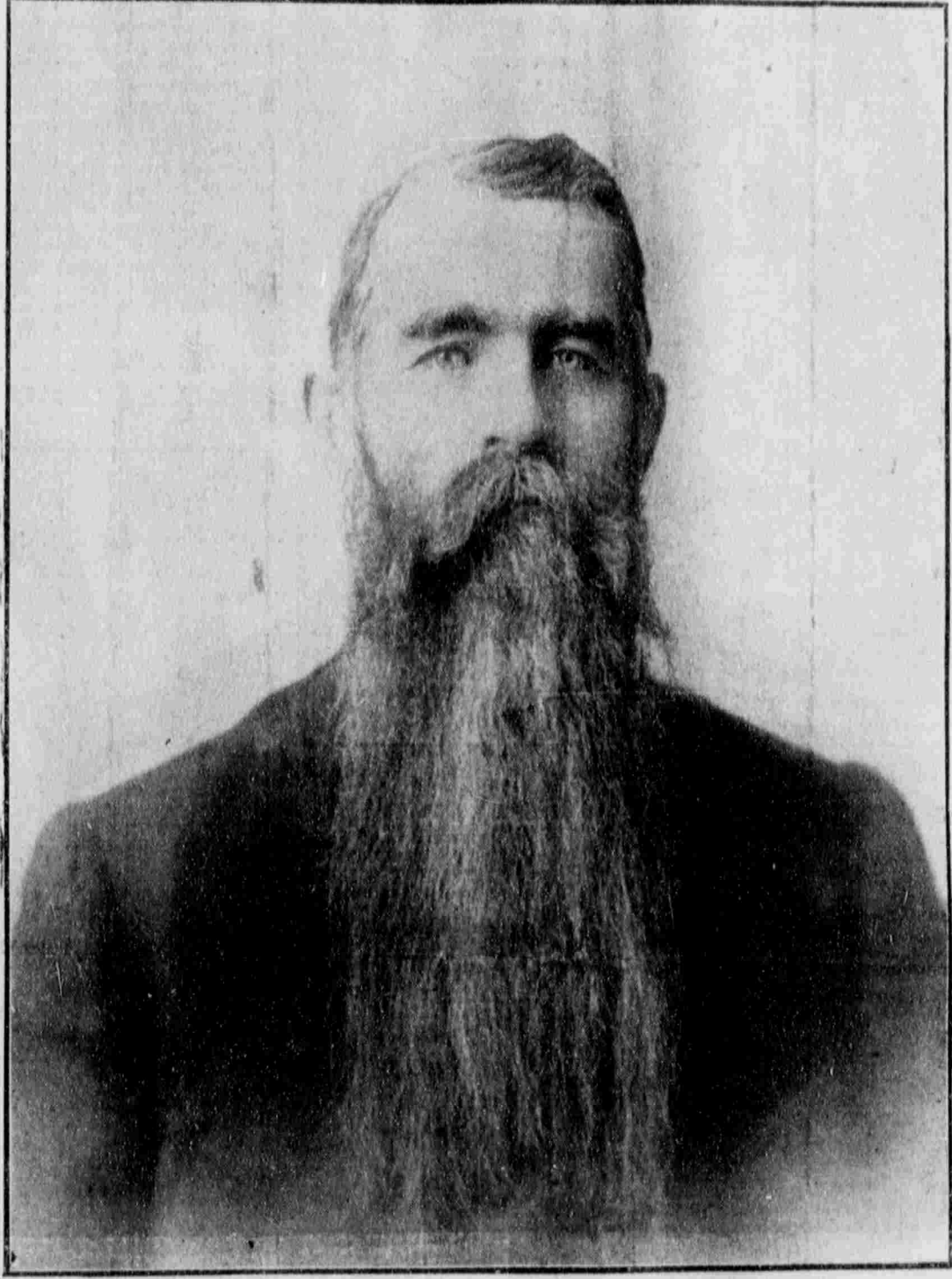
A dispatch from Berlin says the richest man in Germany is Herr Krupp. According to the income tax returns he has an income of between 20,000,000 and 21,000,000 marks (\$32,000,000) a year. No one approaches him in wealth. He stands in a class alone. The identity of the second wealthiest man in the empire, who has a yearly income of between 5,000,000 and 6,000,000 marks (\$7,500,000), is not quite clear, although he is supposed to be the coal master Herr von Thiele-Winckler. The income tax returns show sixty-five incomes of more than 1,000,000 marks (\$1,500,000) a year. Ten of these incomes are under 3,000,000 marks and two are under 4,000,000 marks and three are under 5,000,000 marks a year. The returns also show 2,774 persons who have a yearly income of upward of 100,000 marks (\$125,000).

## POPE LEO NEARING HIS 92ND BIRTHDAY.



If Pope Leo XIII lives until March 2, next, he will have reached the ripe age of 92. If his life is spared until February 29, 1902, he will have concluded his twenty-fifth year in the Papacy. The friends of His Holiness are anxiously looking forward to the celebration of this latter event. Here is the Pope's latest picture showing him enjoying his pastime, for a drive in the gardens of the Vatican.

# OUR BUSIEST MEN.



## JAMES A. CUNNINGHAM.

President James A. Cunningham of the Bank of Commerce has long been prominent and respected in Utah business circles. He came to this city in October, 1848, from Quincy, Ill., driving across the plains with horse and ox-teams. He wintered on the old Fort Square during the season of 1848-49, and then went into the sheep and cattle business in which he became an expert. Mr. Cunningham later engaged in mining, and in the last twenty-five years has been identified with some of the most prominent and valuable mining enterprises and properties in the state. For the last ten years, he has been specially identified with banking in Salt Lake City. He was a large stockholder in the Deseret Bank, and was one of the founders of the Bank of Commerce in 1891, of which for the last two years he has been president.

Mr. Cunningham's long and extensive experience in the three industries which have made Utah great, has given him noticeable prominence in the business affairs of this city and state. He is a member of the Alta Club, he has traveled widely in foreign countries, and has one of the most artistic and beautiful homes in this part of the country.

and keeps on doing so until it has woven a cocoon about its body. This requires from two to five days, and at the end it again goes to sleep.

In the province of Chekiang the spinning is done in what is known as silk worm hills. These are bundles attached to each bundle, and fires are built around the tables that they may be kept warm. While they are spinning the noise is like that of a soft shower of rain, and when the noise ceases the people know the cocoons are completed. After this they are baked or boiled in order to kill the worms and are then ready for reeling, or for sale.

## SELLING THE COCOONS.

Many of these Chinese farmers raise the cocoons for sale. They do not pretend to get the silk out, but market them in bulk. The cocoons are the money crop of many a farmer. He will raise vegetables, rice and other grains for his food and depend upon his cocoons to supply money for his clothing, opium and salt. The government encourages the people to raise silk worms and urges them to plant mulberry trees. The result is that almost every farmer has his little orchard, and the vast product of silk produced in China comes from small farmers. Many a man does not raise more than twenty pounds of cocoons, for which he gets, perhaps, \$4 or \$5 in silver.

The cocoons must be bought within a short time after they are offered for sale. It used to be that fifteen days were set aside for selling cocoons, but of late the farmers in some way or other have shortened this down to four days. The result is that the foreign and Chinese silk makers must have their men on hand at this time to buy the cocoons.

There are regular market centers to which the farmers come with their silk. They will go from buyer to buyer and huckster until they get the highest prices, and the buying is therefore exciting. Each merchant has his own scales, and he buys by the ounce or pound, paying spot cash. This necessitates a large capital, as all the cocoons used for the year must be bought when the sales are on. There are silk factories in this region which spend annually \$200,000 in gold in purchasing cocoons. They have to fix their price according to the selling prices of silk in Europe, and a sudden fall will make them lose money. On the other hand a rise may give them an enormous profit.

## HOW THE CHINESE MAKE SILK.

Much of the silk of China is woven in the homes of the people. I see reeling going on in many of the farm villages. It is done chiefly by the women, the cocoons being kept for the time in clean boiling water. They are stirred around

## TO CONTROL THE WORLD'S SHIPPING?



Despite strong denials of the principals there is a strong and growing belief in shipping and transportation circles that the consummation of a big deal by which most of the oceanic lines will be combined is very imminent. J. P. Morgan is said to be in the movement. J. Bruce Ismay, manager of the White Star line, and the Hon. William James Pirrie, of the White Star and L. cyland lines, are in this country as are several other steamship representatives. The deal is said to be a big one, and is in connection with the alleged deal.