Carpenter in the Orient

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SHANGHAI, Oct. 1.—The mineral resources of China will form an important consideration in the payment of the war indemnity. The Chinese will not stand an increase of taxation; the reformation of the corrupt officials is a work of years, and the most of the money demanded will probably have to be secured by concessions. There is no doubt but China has enough minerals to pay its war debt a thousand times over. It has long been considered the richest coal country in the world, and the railroad surveyors have discovered coal and iron almost everywhere. The Germans have found diamonds in Shan Tung, and mines of gold and silver are being operated in several places at a profit. Still, no one knows just what China contains, and the powers should undoubtedly take advantage of the situation and demand a careful geological survey of the empire. Such a survey would be invaluable to the scientific and industrial world.

Some of the biggest fortunes of the next 25 years will come from the development of China's mines. The country is a very cave of Aladdin, which needs only the genii of modern progress to display it to mankind. Let me give a faint idea of its possibilities. I have gathered information about it from all available sources. I find much in the library of the Shanghai Club, which has papers on China which are unobtainable elsewhere, and I have much from the mouths of Chinese officials and travelers.

Some of the best geological work ever done out here was by Raphael Pumpelly, a Harvard professor, who was employed by the Chinese Government as a mining engineer. He spent five years in making a tour around the world, and much of this time was devoted to China. More recent investigations are those of Baron Richtofen, and lastly of the engineers and surveyors of the railroad syndicates which have concessions from the government.

Immense Coal Fields.

First take the two great industrial metals, coal and iron. China has one of the best labor populations of the globe, and in this age of steel, with coal, iron and modern machinery, it will be a factor in the world's manufactures. Pumpelly says it has the greatest coal fields on earth. There is coal and iron in every province, and several of the provinces are as rich as Pennsylvania in these minerals. Not far west of Pekin there is a great coal bed, which extends along the frontiers of Chihili, through the Province of Shansi, and thence down through Honan and Hupeh, into another vast coal and iron district in Hunan on the south side of the Yangtse. There are important coal fields in eight of the provinces below the Yangtse Kiang, and especially in the Province of Yunnan.

Yunnan is about the size of California. It is almost as big as the combined areas of Michigan and Wisconsin. It lies right on the border of Burmah, and will be reached by the railroad which is projected from Burmah to China. The Yangtse River forms a part of its northern boundary, and through it the coal can have access to many thousand miles of waterways reaching hundreds of millions of people.

Yunnan has a population of more than eleven millions, and with its coal, iron, copper and other minerals it will probably be a great industrial and manufacturing center. The state has already a trade of $2,500,000 a year, a part of which is coal.

The mines have been worked for ages. The province is mountainous, and the coal, both bituminous and anthracite, lies on the edges of a great plateau in the center of Yunnan, at an elevation of a mile above the sea. Other beds are near the Yangtse and Kiang Rivers. They are said to be easily worked.

In German China.

Shantung, which is claimed by the Germans, has rich coals. The mines begin within 40 or 50 miles of Kiaochau Bay, and extend through the mountainous regions back of it. Our Consul at Che Foo recently received a report made upon some of them by a foreign engineer. He reports a vein of coal four feet thick in Shinta, which he says is for sale. It is close to another mine which is now being operated at a profit. Near this same mine there is a bed five feet three inches thick, which could be worked on shares, and three miles away another has just been sold for $4500 to the Germans. One of the mines of this region is already turning out 1000 tons of coal every day, and another has produced coal to the amount of $300,000.

There are other regions in Shan Tung that are much better than this, some of which the Chinese have been working for ages. In the mountains just back of Kiaochau there are thousands of Chinese mining coal. They work 12 hours a day for from 6 to 10 cents. The mining is primitive. The coal is dug out with picks and carried from the mine in rawhide sacks on the backs of men. It is then put into baskets on wheelbarrows, from two to four baskets being fastened on the shelves which jut out on each side of the wheel.

It is in such barrows, pulled and pushed by men, that the coal is taken to the market. Some of the wheelbarrows have sails. Only little can be carried on a barrow, and the freight rates are so heavy that it costs $6 to bring a ton from the mines to Kiaochau, a distance of 70 miles. Coal worth $2 25 a ton at the mines sells for $7 a ton a few miles away.

The Germans are now building a railroad to these mines. The roadbed is almost completed, and the cars are on the way. As soon as the conditions become settled it will be put into operation and this coal will have an outlet to the sea.

Along the Yangtse.

The Yangtse Kiang is one of the most wonderful rivers of the world. It is over 3000 miles long and it almost bisects China. The biggest ocean steamer can sail up it into China as far as New York is distant from Chicago, and with its tributaries it furnishes more than 12,000 miles of navigable waterways. There are vast coal deposits, which could easily be made accessible to the Yangste Kiang. This is so of the Shanst coal beds, which I describe further on. They are the greatest in China, and a short railway will bring them to the Han River, which flows into the Yangste at Hankow. The mines of Yunnan are not far from the Upper Yangtse, and there are coal beds all along the Yangtse Valley. I am told they are to be found near Nanking, Hankow, and from Chinkiang to the borders of Thibet.

Mrs. Bishop visited a coal mine in Sichuen, on the Yangtse, about 2000 miles back from the sea. She says the seam was four feet thick, and was of a hard bituminous nature. It was reached by a tunnel, in which was a wooden tramway, and the coal was carried out in baskets on wheels. The mine was worked day and night in shifts of 12 hours, the miners being paid 14 cents a day, with an allowance of three meals of rice. The coal costs 40 cents a ton in labor, and a short distance away from the mines it was selling for $1 75 a ton.

In the Upper Yangtse, near Suchau, there are coal mines in the side of a cliff, which has been opened by galleries hung from the top with ropes of plaited bamboo. The miners bring the coal out upon the galleries and thence slide it down in baskets into the boats on the Yangtse.

Abandoned Mines.

There are thousands of abandoned mines both along the Yangtse and in other parts of China. One of the greatest troubles is water. The Chinese have no good pumps and as soon as the water comes into the mines they leave them. Shafts are seldom put down more than 200 feet.

In Shan Tung the experiment of trying modern pumps was attempted. The pumps were ordered from England and were brought into the coal regions at great cost. They were allowed to lie there and rust until thieves had stolen many of the parts. Then an engineer was brought from Shanghai to put them up, but was unable to do so.

The old American firm of Russell & Co., when they owned the steamers on the Yangtse, got all their coal from Ku Klang. There was an explosion from fire damp and the Chinese thought the devil had gotten into the mine, and it is shut to this day.

Another instance of Chinese superstition occurred in one of the Kaiping mines, which lies near Tong Shan on the Tien Tsin-Shanhaikwan Railway. These mines are the greatest in China. They employ about 10,000 men, and have an output of 1500 tons of coal a day. I have visited them, and can say that they are up to date in their machinery and modern methods of working.

These mines at Kaiping are operated by Chinese under foreign supervision. Not long ago a new mining engineer from London was brought to take charge of them. He went through the mines and was surprised to find a large block of the best coal in the center of one of them. He asked why it had not been taken out, and was told that it was the home of a water demon. Upon inquiry he found that the former engineer had left it partly to please the Chinese directors and partly because he thought there might be something in the theory.

Water Demon Cuts Loose.

The new man said: "Hang the water demon! Let's get out the coal." The Chinese still protested, but as he insisted, they put in a blast and fired it. When the wall of coal fell, a great stream rushed in, flooding the mine and shutting up access to many chambers. Since then the water in that mine has not been controlled, although the costliest of pumps have been purchased. The block of coal was in reality a great pipe in which a subterranean river flowed through the mine. The coal had been cut out about it, but the pipe had been left intact until the engineer ordered it dynamited. The Chinese must have suspected the river. At least they looked upon it as holding a demon.

If you will take your map of China and look at the province lying west of Chihli, bordered on the north by Mongolia and on the west by the winding Hoangho, you will see the Pennsylvania of the Chinese Empire. It is the province of Shansi, which is said to contain the greatest and richest coal area of the globe. It is just about as big as Illinois, and it has four times as many people. It is of much the same shape as Illinois, and like Illinois has a great river running about its western and southern sides. It contains than a mile above the sea. This tableland is made of sandstone, shale and conglomerate of as many different colors as the cliffs of a Colorado canyon. The top of the plateau is covered with a rich loess deposit, a bed of clay or dirt from 500 to 1000 feet deep, which is gullied with water courses. Under the dirt there are vast deposits of coal and iron, exposed by the water. There is a great deal of coal about the edges of the plateau and in the mountains. It lies at an elevation of about 2500 feet, in horizontal beds, and is to be seen wherever the rivers have cut through.

The anthracite seams are unbroken over an area of more than 13,000 square miles. They are of a thickness from 25 to 50 feet, and of an average of 40 feet. The anthracite gives from 8 to 10 per cent of ash, and it is but slightly impregnated with sulphur.

Th bituminous coal fields of Shansi have an area of 12,000 square miles, or as great as that of Massachusetts and Connecticut. They lie in the western part of the province not far from the Yellow River, and are spotted here and there with deposits of petroleum or limestone and rich iron ore.

A part of this rich territory has been gobbled up by some big capitalists, under the name of the Pekin syndicate. These men have a grant from the Emperor and have farmed out the development of their mines to the Anglo-Italian Syndicate, which claims a capital of £30,000,000.

The concessions of the Pekin Syndicate include the rights to all the petroleum of Shansi, and to a large part of its coal and iron. Professor Drake says they have one bed of coal which contains more than 3,000,000 tons of fine anthracite. The bed is 22 feet thick on the average. They have other deposits which are even more valuable.

Their concessions lie in Central and Southern Shansi and extend over into Honan and the mountainous regions below the Yellow River, comprising a territory greater than the whole of New England and forming perhaps the richest coal concession ever made.

Vast Iron and Coal Deposits.

I find a general belief here that China is rich in the precious metals, and the geological surveys so far made point to iron and limestone in vast quantities, and in the future it will probably be the greatest manufacturing and steel-making section of the world.

This province has been recently visited by Noah Drake, of the Imperial Chinese University of Tien Tsin. He speaks of the anthracite area as greater than that of Pennsylvania, and estimates that it contains more than 600,000,000 tons of coal. There is quite as much bituminous as anthracite, and the deposits of both kinds are beyond description wonderful.

Shanst is a mountainous country, with a great tableland in its center rising more than a mile above the sea. This tableland is made of sandstone, shale and conglomerate of as many different colors as the cliffs of a Colorado canyon. The top of the plateau is covered with a rich loess deposit, a bed of clay or dirt from 500 to 1000 feet deep, which is gullied with water courses. Under the dirt there are vast deposits of coal and iron, exposed by the water. There is a great deal of coal about the edges of the plateau and in the mountains. It lies at an elevation of about 2500 feet, in horizontal beds, and is to be seen wherever the rivers have cut through.

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Vast Iron and Coal Deposits.

I find a general belief here that China is rich in the precious metals, and the geological surveys so far made point to the same conclusion. The Germans say that there is plenty of gold in Shan Tung, and that the Chinese there are washing it out of the streams. Gold is now being mined in Mongolia and in different parts of Manchuria. The Moho Mining Company is working placer deposits not far from Moukden; it has already exported something like $1,000,000 worth of coarse gold. There is gold in Yunnan, in Southwestern China. There are placer deposits along the Han River, and also all along the western highlands on the borders of Thibet.

Pumpelly found silver in 63 different localities and lead in 34. In Yunnan the silver is mixed with the lead. The province has also tin, zinc and iron. Lead is also found in Fukien, opposite the Island of Formosa, and in Kwan Tung, not a great distance from Canton.

The big dividends now being paid on copper mines in the United States may at some time be paralleled in China. The copper ore is rich, and it is said to exist in every province. It is being mined in Shenst, where the Emperor has fled, and also in Kweichau, below the Yangtse. Yunnan has a white copper which is mixed with tin, iron, nickel and lead, and it has copper and lead. The Yunnan copper mines are now worked by native companies, who have been paying about a cent a pound royalty to the government, and four times that amount to the owners of the mines.

Money in Stones.

I know several Americans who are studying the stones of China with regard to the American market. I met a gravestone man from Seattle at Hong Kong two weeks ago. He had been traveling through the province of Kwan Tung looking up granites and marbles. He told me he expected to establish a business in Canton for the making and exporting of tombstones and fine building stones to the United States. He says the granites and marbles of China are as fine, if not finer, than ours, and that our workmen are not so skillful as the Chinese. He believes he can manufacture here 10 times as cheaply as in the United States, and says the high freight is nothing in comparison.

This man is right about the artistic ability of the Chinese in stone-cutting. They make magnificent monuments. They cut turtles and memorials of various kinds out of marbles and their work in the Ming Tombs and in some of the great Bridges near Pekin is as fine as that of any sculptor. It seems odd to think of the Confucian Chinese cutting out tombstones for the Christian cemeteries of the United States, but this is a possibility.

The chief money to be made here is in the industrial metals. I am told there are rubies, amethysts, sapphires, diamonds and opals in different localities, but these are nothing in comparison with the value of the copper, coal and iron. If concessions are granted and the country made safe there will be an influx of foreign prospectors as soon as the treaty of peace is settled. There will probably be many Americans, and our Government should see that the mining regulations are so fixed by treaty that there can be no dispute as to title and the working of the mines.

Laws Governing Concessions.

At present China has a Bureau of Mines and Railways. It has certain laws as to foreigners who wish to open up such territory. But at present these laws are altogether in favor of the Chinese.

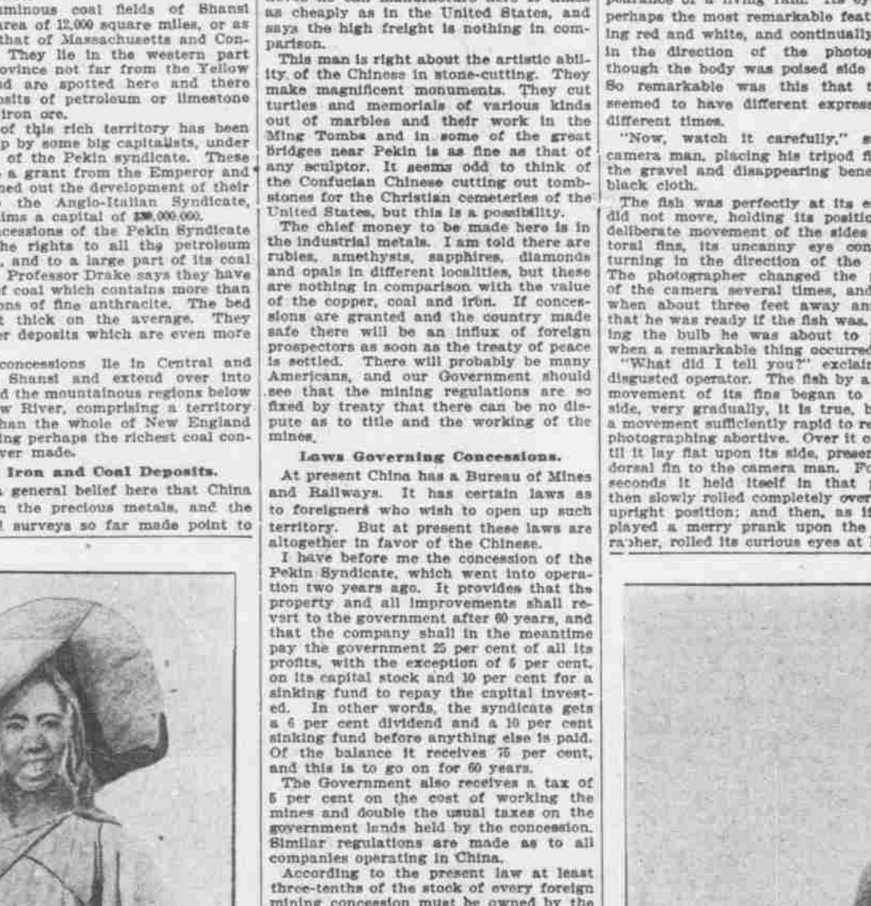
I have before me the concession of the Pekin Syndicate, which went into operation two years ago. It provides that the property and all improvements shall revert to the government after 60 years, and that the company shall in the meantime pay the government 25 per cent of all its profits, with the exception of 5 per cent, on its capital stock and 10 per cent for a sinking fund to repay the capital invested. In other words, the syndicate gets a 5 per cent dividend and a 10 per cent sinking fund before anything else is paid. Of the balance it receives 75 per cent, and this is to go on for 60 years.

The Government also receives a tax of 5 per cent on the cost of working the mines and double the usual taxes on the government lands held by the concession. Similar regulations are made as to all companies operating in China.

According to the present law at least three-tenths of the stock of every foreign mining concession must be owned by the Chinese. It is impossible to get a concession where all the capital is foreign. In no case will the government be responsible for losses of any kind.

All grants for such concessions must be sanctioned by the bureau of mines, and promoters are required to show proof of having capital before their applications will be considered. The books of all mining companies must be open to government inspection, and every such company must establish a school of mines for young Chinese mining engineers.

FRANK G. CARPENTER.



COAL FREIGHT TRAIN, SHANTUNG, CHINA.

CHINESE COAL MINERS.

Proper Use of English.

Richard Burton, in writing in East and West of "The Use of English," says:

"Words, like men, have their 'strange eventful histories,' and again like men, one word in its time 'plays many parts.' To follow the ups and downs of a single proper noun—a stupid name since its career is as often as not improper and hence doubly fascinating—or of a common noun—named with equal stupidity, since its story is likely to be most uncommon—this pursuit, I say, is often as exciting as a novel or a football game.

"Thus it follows that the dictionary (rightly used and comprehended) is the most interesting of all books, save perhaps the Bible. Dr. Holmes knew this when he made the Autocrat say:

" 'When I feel inclined to read poetry I take down my dictionary. The poetry of words is quite as beautiful as that of sentences. The author may arrange the gems effectively, but their shape and luster have been given by the attrition of ages. Bring me the finest simile from the whole range of imaginative writing, and I will show you a single word which conveys a more profound, a more accurate and a more eloquent analogy.'

"Emerson had the same feeling when he wrote: 'It does not need that a poem should be long. Every word was once a poem.' "

In a character sketch of Hanna, in McClure's Magazine for November, William Allen White offers a discriminating study of the Ohio Senator. He describes the many business successes of the Senator, his gradual realization of the connection between business and politics, his achievements as a party leader, and his relations with President McKinley. The article is accompanied by a portrait drawn from life of Jay Hambridge

PHOTOGRAPHING FISHES

THEY DON'T ALWAYS LIKE IT AND PLAY TRICKS ON OPERATOR.

Fish That Seemed to Know the Critical Moment and Turned Somersaults.

Avalon (Cal.) special to New York Sun: "This is the hardest proposition I ever attempted," said a photographer who was watching a large experimental tank in the zoological station. "This is the third week I have chased that fish around and it seems to know exactly what I am trying to do, and has one trick that is fatal to a good photograph—it turns somersaults at the vital moment. I will prove it to you; keep your eye on the fish."

The fish was a peculiar creature of about 10 or 12 pounds, banded horizontally in light red and jet black, sharply defined; its big under jaw pure white. Its head was blunt, giving the fish the appearance of a living ram. Its eyes were perhaps the most remarkable feature, being red and white, and continually turned in the direction of the photographer, though the body was poised side to him. So remarkable was this that the fish seemed to have different expressions at different times.

"Now, watch it carefully," said the camera man, placing his tripod firmly in the gravel and disappearing beneath the black cloth.

The fish was perfectly at its ease and did not move, holding its position by a deliberate movement of the sides or pectoral fins, its uncanny eye continually turning in the direction of the camera. The photographer changed the position of the camera several times, and finally when about three feet away announced that he was ready if the fish was. Grasping the bulb he was about to press it when a remarkable thing occurred.

"What did I tell you?" exclaimed the disgusted operator. The fish by a curious movement of its fins began to tip one side, very gradually, it is true, but with a movement sufficiently rapid to render all photographing abortive. Over it came until it lay flat upon its side, presenting its dorsal fin to the camera man. For a few seconds it held itself in that position, then slowly rolled completely over into an upright position; and then, as if it had played a merry prank upon the photographer, rolled its curious eyes at him and swam slowly around its glass prison.

"If it has played that trick on me once it has a dozen times," said the photographer, "and how many plates I have spoiled I don't know. The only fair photograph I have is this," holding up one which showed the fish very satisfactorily for a fish photograph, but a little indistinct. "I caught it just as it was rolling, but the thickness of the water and the glass are obstacles which have to be considered. The half-dozen pictures I have taken are the result of weeks of patient waiting, and some fish are simply impossible.

"One of the best photographs I have secured is that of the rock bass. You see it loves to hide in the weed, so I arranged the tank for it, placing a mass of weed near the glass; then I put a number of fish in it, ranging from one to four pounds. They immediately darted into the weed, three taking a position between it and the glass, where I caught them with an exposure, say, of ten seconds. I have a fine picture of two morays—sea snakes, they call them. They are as large as a man's leg and five or six feet in length. I put them in a tank in which there was an upright post, about which they turned slowly, showing only their heads and about a foot of the bodies. The only trouble was they kept opening and shutting their mouths, and while the picture is good, as you see, it shows a duplication of the lower jaw and the teeth; but it is the first photograph ever taken of this fish, and so has value.

"It is an entirely new field," continued the camera man, "and you can make no rules for it. Every fish appears to be different. Some are frightened at the sight of the camera and will not keep still. This is especially true of the octopus. I ruined a dozen plates on the octopuses and tried them every way. But I could never get one to remain in the center of the tank while it was being photographed. They make for the corners if they can find stones, and if disturbed throw out a cloud of ink which fills the water so that it has to be emptied out before another attempt is made. One of the difficulties in the way of photographing in water is the uncertainty of how much there is between you and the object. To arrange this I had a tank made about three high and three feet long, the width being a little over that of the fish, so that it could not get far away.

"This has been a success with some fish, but not the octopus; there was too much light, and though I had half a dozen of the creatures in the tank at one time it was almost impossible to get them. Finally, I decided to hold them in place; but then I had difficulty in finding any one who had the nerve to touch one of the animals, and no wonder! the moment I put my hand into the tank ten or twelve longe snakelike arms would dart at it, and, if I held it there, take hold. Generally, one glance at this was enough to satisfy the average man. One fellow at my offer of money said he needed it, but I hadn't enough money to hire him to take the job. I finally got some one; in fact, a man under whose direction I took the photographs. When he learned what I wished to try he took hold of the largest octopus and held it in the center of the tank.

"It was a horrid sight, and no mistake. The animal turned all the colors of the rainbow; its eyes flashed green fire, and it threw its eight arms around the man's arm and planted its hundreds of suckers into the skin, as though it intended to tear the flesh in pieces. What it really was trying to do was to bring its parrot-like beak into a biting position. The man who held it understood this, and by main force held the ugly creature, which looked more like a ball of snakes than anything else, so that I could not photograph it.

"The most sensational animal I have tried to photograph alive," continued the photographer, "was a large squid. One day some big fish chased a school of squids into the bay, and three or four were caught alive and placed in a tank. They were about six feet in length, the tail was like an arrow, the head branched out into 10 sucker-like arms, and the eyes were as black as jet and as large as a saucer. Right in the center of the arms was the mouth; its teeth were on the tongue, and it had two large brown bills, almost exactly like those of a parrot. The body of one was pressed against the glass and was continually changing color—all shades of brown and red to white—and so rapidly that it looked like flashes of lightning. Another of the squids flung its arms over the side of the tank and held on, and I was just about to take it when it sent a stream of black ink into the air, striking the man who was leaning over it. The ink fell in the water, and that ended the business. These squids were so heavy that it took three men to lift one.

"By far the best picture I have taken is that of a jellyfish—a beautiful creature. I caught it at the surface, and got it perfectly. Of course, the tentacles were not shown, as they were 10 feet in length; but the body part is perfect. Another rare fish photograph was that of the ratfish, which was brought up from water 600 feet deep. Being a very sluggish creature, it made a successful picture, showing its long, rat-like tail, enormous eyes and silvery appearance. The photographs of these fishes are the only ones ever taken; in fact, the experiment is the most successful one, where large marine fishes are concerned, ever made.

SAMPLE OF CHINESE MONUMENTAL SCULPTURE.

Evaporation of Trees.

Some curious facts concerning trees have been discovered. A single oak of good size was found to lift 123 tons of water during the months it was in leaf. The moisture evaporated and formed rain clouds. From this estimate of the labor of a single oak one can gain some idea of the immense force which the forests exert in equalising the evaporation and precipitation and preventing periods of inundation and drought.

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