

# **CHINA'S INDUSTRIES AND FINANCE**

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CHINA'S INDUSTRIES  
AND  
FINANCE

Being a Series of Studies in Chinese  
Industrial & Financial Questions

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The author's father, Mr. Meng-hsiung Lieu.

像遺(熊孟諱)生先青味劉  
(父之者著)

To the memory of  
my father,  
who, in my childhood, taught me  
the rudiments of  
modern science and languages,  
and imparted to me  
an unquenchable thirst for knowledge,  
and to my mother,  
who gave me the opportunity  
of studying abroad,  
this book is  
respectfully and affectionately  
dedicated.

## Foreword.

As I have written quite a number of articles on industrial and financial questions of China for various publications, I think it may be useful to put some of my research studies together, and publish them in book form, to furnish reference for those who are interested in these questions. The result of this is the present volume. Many of the earlier articles have been thoroughly revised, some practically rewritten, and a good deal of new data are added which have been collected by the Investigation Department of the Bureau of Economic Information under my charge during the last seven years. The twenty odd statistical tables which appear in different parts of the book are compiled from various official publications, and give the essential features of the original data in the most condensed form convenient for comparison and analysis. They may be said to constitute the principal industrial and financial statistics of China.

My thanks are due to Mr. W. H. Donald, Acting Director of the Bureau of Economic Information, Dr. Ta Chen, Chief Statistician of the same Bureau, and my wife for their valuable suggestions and help in reading the proofs.

D. K. LIEU.

Peking, China, August, 1927.

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# I.

## The Industrial Development of China.

Manufacturing industries in China may be classified according to their size and nature into three different kinds: (1) workshop industry, (2) cottage industry, and (3) modern factories. The first is the same as a workshop in Mediaeval Europe, with its master-workman, journeymen and apprentices. In some cases, however, it may have grown to such size that it is more like a modern factory than a mediaeval workshop, yet, for one reason or another, it cannot be very well classified under (3). There may be more than 100 workmen in one establishment, yet the shop is owned and operated by a master-workman, with no capitalistic proprietor or manager who has not served apprenticeship in the trade himself. In some instances, there may be such a proprietor, but the management is in the hands of a master-workman who has full power in running the business, without consultation with the proprietor, and who shares as much as half of the profits. The proprietor and the master-workman are really partners, the former being a sleeping partner. Besides, the shop has no expensive labor-saving machinery, but the most important part of the manufacturing process involves special manual skill. Also, there is no power plant, although electric power may be rented from a local company. In such conditions, the shop has certainly outgrown the size of a mediaeval establishment, and may have a few depart-

ments each with a score or more workmen, yet the mere size of it will not put it in the same category as modern factories.

By cottage industry is meant such manufacturing as is carried on in the homes of the workers. Members of the same family are usually engaged in the same trade, although sometimes the husband may be employed in a factory or workshop while the wife and children carry on the cottage industry themselves, such as the making of lace, hairnets or knitted goods. The number of workers in such a manufacturing unit is necessarily small, generally smaller than that in a workshop, yet sometimes relatives and friends may gather under one roof to work together, thus converting the home into something like a small workshop. The raw materials are often obtained from factories or commission merchants, who pay for the work at piece rate, and dispose of the products when finished. In such cases the workers are really employees of these factories or merchants, though the work is carried on in their own homes. Match factories, for instance, usually have the match boxes made in the workers' homes, with material supplied by the factories, and this arrangement saves floor space in the factories, and is convenient to both parties where the work needs no supervision. In other cases, the cottage manufacturers also produce on their own account, and dispose of the products at market places, to retail shops, or along the streets. All peddlers of toys and other simple products are of this class.

From the considerations in the first paragraph, we may define a modern factory as an industrial establishment which is not owned or managed by a master-workman, but which has expensive modern machinery with, perhaps, a modern power plant. Many people may not agree to this

definition, and I am not unaware of the fact that factories are often classified according to the number of workmen in them. In fact, the provisional Chinese Factory Regulations of March 29, 1923, also define a factory as an industrial establishment employing more than 100 laborers. Still, for the purpose of the present article, and perhaps for Chinese economic studies in general, the distinction based on the nature of the management and the utilization of machinery is more useful, as workshops so classified have more features in common with each other than with modern factories. Concerning machinery, it may even be convenient to draw the line arbitrarily at \$10,000 *yuan* (Chinese silver dollars) as the minimum cost of the plant of a modern factory, because many small workshops organised along old-fashioned lines are now equipped with modern lathes and presses, but they do not exceed a few thousand dollars altogether. Good illustrations of modern factories in China are steam filatures, cotton mills and the so-called machine-flour mills (as distinguished from old-fashioned mills which grind flour with millstones operated by mules or electricity.)

#### **Chinese Handicraft Industry.**

Some concrete instances illustrating the conditions in these three kinds of manufacturing units will show the industrial development of China more clearly than any number of general statements. The fur and leather business of Suanhwa (宣化) may first be described as an example of the workshop industry. There were over 60 shops in the business in that locality at the time of investigation by this Bureau (September, 1925), employing about 5,600 men. The largest had 140 laborers, five others had more than a hundred, but the majority of the comparatively large firms



employed between 40 and 80.

Although the business had long been established in Suanhwa, the laborers are mostly natives of another district. They are engaged only for a part of the year, from seven to nine months. Those who scrape the skin—an important part of the manufacturing process—need to have the highest skill and are paid the highest wages; those who cut the skin into the proper sizes come next, and those who comb the fur, last. The scraping is done with a brush made of the stems of *kaoliang* (sorghum). While wet, the inside of the skin is covered with fine sand so that whatever flesh remains on it takes on the sand and becomes stiff, when it can be easily scraped off with a spade-like knife. The fur is cleaned with an iron comb, and then beaten with a slender cane to remove dust and particles of earth. Drying is done in the sunshine, and soaking process is carried on in a wooden vessel, 3½ feet high and from 4 to 5½ feet in diameter. In it is a paste made of ingredients mixed with the hand, and when the skins have been soaked for a fixed number of days in the paste, they are taken out, each piece being taken by two men, who shake it until no particle of the paste remains on the fur. All other work is also done by hand, with the help of simple hand tools.

The largest demand is for fur rugs, which comes mostly from foreign exporters. The foreign firms of Shanghai began to buy them as early as 1882, and Tientsin merchants appeared on the market in 1891. Even in the latter year, the number of furriers in Suanhwa did not exceed ten. Then it suddenly increased to over 20 some two years later, and over 50 in 1915. The trade received a setback during the Great War, the number falling to 30 in 1916 and 1917. In 1920, recovery began, and in 1922 there

were 43 shops producing coarse furs, including rugs, valued at \$490,000, and 61 shops produced \$1,600,000 worth of fur in the year following. Divided by 5,600, it meant an average annual production of \$285 per laborer.

Another workshop industry which is of even greater importance is porcelain manufacturing in Kingtehchen, Kiangsi. No one today can tell exactly when porcelain ware was first used in China. As far as can be ascertained from classical literature, the word *tse* (瓷), which now stands for porcelain, first appeared in an essay by Pan Yueh (潘岳), a well-known writer of the Ching dynasty (晉) (265-419 A.D.). The name of Changanchen (長安鎮) now Kingtehchen, appeared in history as a porcelain manufacturing center as early as the Sixth Century, A.D., but some people are inclined to believe that modern porcelain was first made in the reign of Wu Teh (武德) (618-627 A.D.) of the Tang dynasty, when an inhabitant of this town presented to the emperor a collection of "jade-like *tse*." During the reign of Cheng Chung (真宗) 998-1022 A.D.) of the North Sung dynasty, every piece of porcelain intended for the court was engraved with the characters King Teh, which was the reigning title of the said emperor. Through this association, the famous porcelain manufacturing center of Changnanchen assumed its present name.

Whether the Sung emperors had official kilns at Kingtehchen, historians did not make clear, but it is certain that there were no such kilns in the Yuan or Mongol dynasty, although private kilns already existed in large numbers. In the Second Year of Hung Wu (洪武) (1369 A.D.) of the Ming dynasty, what were known as official kilns (官窑 *kuan-yao*) were first established at the foot of the Chushan Hill (珠山) near the town, to turn out porcelain wares exclusively for the imperial house. The

industry reached the highest development during the following reigns, but declined towards the end of the dynasty. A fresh impetus was received in the early part of the Manchu dynasty, but again there was a setback towards the end of the last century, when all the imperial kilns of former ages were left in ruins. In the town and its neighborhood, there were only a little over 100 private kilns, producing porcelain of ordinary grade. Although efforts have been made by both dealers and manufacturers to revive the industry under the Republic, and a few modern kilns were constructed there, their efforts were not crowned with success. The principal reasons are: (1) lack of transportation facilities between Kingtehchen and the outside markets, (2) lack of adequate capital on the part of the manufacturers, and (3) lack of close co-operation between the manufacturers and the dealers.

#### **The Porcelain Industry.**

Porcelain clay is obtained in the neighboring quarries. About 10,000 diggers, breakers and washers are engaged in preparing it for the kilns, but they still follow time-honored methods, and the clay is not ground to such fine particles as to suit foreign manufacturers. Proposals have recently been made to use modern machinery in this connection, but insufficient capital prevents their execution. Another separate class of manufacturers are the makers of the saggars, who numbered 200 in May, 1926, at the time of the investigation by the Bureau. A sagger-maker's workshop consists generally of a thatched hut, equipped with a variety of revolving discs or potter's wheels and wooden rings of different sizes. The average monthly output of each shop is about \$400 worth of unfired saggars. Although apprentices serve terms of four or five years, the

trade does not take much time to learn, and they are generally put on regular work after a short training.

In making porcelain, a mixture of two or more kinds of clay is reduced to a "slip" in large earthenware vessels, where it is thoroughly stirred with a wooden spade, and the fluid is removed to another vessel and filtered through a horse-hair sieve of great fineness. Then it is evaporated, yielding a fine clay, which is kneaded with a spade and later with the hand to produce the desired consistency. In making wares from the clay, two different methods are used, one of which consists of throwing it on a potter's wheel where the workman shapes it with his hands into various kinds of shallow round vessels like dishes, plates and bowls. Cylindrical, square and hexagonal wares are made by building up the articles from a mass of clay, adding with the hand a piece here and removing one there until the desired shape is obtained. Glazing is done by brushing with a writing brush, blowing with a brass blow-pipe or dipping the ware in a solution of glazing material.

When fairly dry, they are enclosed in saggars and fired in old-fashioned, vertical-type kilns, which look like huge cylinders lying horizontally on the ground. They are over ten feet in diameter and about 30 feet long. They open at one end, and the chimneys, about 30 feet high, are at the other. Four classes of workmen are engaged at the kilns: (1) the porcelain placers who place the unfired wares into the saggars, (2) the sagger-placers who place the saggars in the kiln, (3) the firemen and (4) the drawers, who draw out the wares from the kiln after firing. All these processes need much skill, for the men must know where there is the highest temperature in the kiln, whether the firing should be "intense," "slow" or "open," how the saggars must be placed so as to suit the

different kinds of clay, etc., lest the breakage of some saggars spoil the whole charge. Usually the burning of one charge of a kiln takes about 36 hours, and it is attended by 13 or 14 workmen of all four classes.

As many porcelain manufacturers in Kingtehchen have no kilns, they often rent spaces in the kilns of others. The rent varies according to the nature, size and other particulars of the "biscuits," but they are definitely fixed by custom which no kiln owner can alter. Further glazing and decoration are done in still another set of workshops known as *hungtien* (紅店). Thus, there are four classes of manufacturers in this industry—the producers of porcelain clay, the sagger makers, the porcelain manufacturers and the *hungtien*. The finished wares are sold to exporters at Kingtehchen through commission houses, and through the former they are distributed all over the country.

Although workshops prevail in indigenous industries which have not been affected by modern methods, some small scale modern industries have been introduced into China and carried on in them. Some of the Chinese laborers who returned from France after the Great War and who learned something about modern machinery over there have opened small workshops to manufacture machine parts and small machines. There are quite a few of them in Peking turning out knitting machines, small lathes, etc. The raw material is often imported, as are certain parts which they cannot manufacture or which can be bought cheaper from abroad, such as knitting needles.<sup>1</sup> Modern bath-room boilers are also mostly products of similar workshops.<sup>1</sup> Such shops are usually owned and managed by a master-workman, although the work is not a handicraft, and they

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1. Investigation of the Bureau, 1926.

therefore constitute a compromise between the old-fashioned workshop and the modern factory.

#### Cottage Industry.

The manufacturing of knitted hosiery in certain localities illustrates another kind of Chinese industry—the cottage industry. In Pinghu, Chekiang (浙江), there were at the beginning of 1926 over 10,000 knitting machines producing approximately \$4,000,000 worth of hosiery.<sup>2</sup> The industry was first introduced into that locality in about 1910, when it was not found anywhere in China except Shanghai. A Pinghu merchant named *Kao* saw the possibilities of the industry, and bought some ten knitting machines from Shanghai and started business in his own town. Although the machines were then all imported, and cost \$100 silver a piece, *Kao* was able to market his products at lower prices than imported hosiery, and gradually he expanded his factory by the addition of more machines, until in 1926 it possessed 1,000 of them, and was the largest factory in Pinghu.

At first the female hands worked in the factory, but as demand for its products grew very rapidly and the factory had no adequate space to take in more laborers, arrangement was made for the distribution of the machines to the laborers in their homes. The raw material—yarn—is also supplied by the factory, and for one catty of yarn supplied the laborer must turn in also one catty of knitted stockings. The wages are from 22 to 26 cents per dozen pairs, but the laborers must pay a monthly rent of two dollars for the machine. At the beginning, a deposit of \$8 must be made with the factory as a bond for the machine, for repairing which the factory, and not the laborer, is responsible.

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2. Investigation of the Bureau, 1926.

As the cost of the machine is now only \$20, the \$2 monthly rent is very profitable to the factory, and one having a thousand machines will derive \$2,000 a month from this source alone. On the part of the laborers the arrangement is also agreeable. They can attend to their household duties while earning their living, and as an average worker can knit a dozen pairs every day, the monthly income, even after deducting the machine rent, would amount to about \$5—fair earnings for a woman at home, especially as it takes so little time to learn the work. The industry also flourishes in Kashing (嘉興), Kashan (嘉善), Shihmen (石門) and Kiashih (硤石), all of Chekiang province, not far from Pinghu. Similar conditions exist around Foochow, Fukien province.

Another example of cottage industry is cloth weaving in and around Kaoyang (高陽), Chihli.<sup>3</sup> In fact, this is the place where the idea of renting out machines to laborers working in their own homes was first introduced. In 1902, some local gentry imported a few modern looms from Tientsin and started weaving cloth in imitation of imported varieties. The largest factory was Ho Kee (合記), established in 1910 with a capital of \$20,000. As its business began to grow, it bought more and more looms, but kept only eight of them in the factory, the rest being all rented out. In 1913, when the Chihli Commercial Museum made an industrial survey of the province, it was found that the Ho Kee factory had 200 looms rented out, producing about 100 pieces of cloth every day.<sup>4</sup> When a special investigator of this Bureau visited the district last August, the estimated total production of cloth reached at least \$2,000,000 a year.

The industry is almost entirely carried on by farmers

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3. Investigation of the Bureau, August, 1926.

4. 直隸省實業調查記, 商品陳列所編

when they are not occupied with land cultivation, while in the five small factories then existing, there were only some 40 looms. The district has 144 villages, with a total population of 130,000, of which, it is said, about 90 per cent is engaged in the weaving industry. Cotton yarn is imported from Tientsin on junks along the Chulungho river (豬龍河) to Tungkowchen (洞口鎮), 30 li from Kaoyang, whence it is conveyed by mule carts to the district. When manufactured into cloth, it is carted to Potowchen (泊頭) on the Tientsin-Pukow Railway and then shipped to Shantung by train, or carted to Paoting on the Peking-Hankow Railway, and then shipped to Peking, Kalgan, Shansi, Suiyuan, Honan, Shensi, Hupeh and Mongolia. The industry is one of the largest in the province, and has extended to the surrounding districts, such as Jenchiu (任邱), Wenan (文安), etc.

Somehow different from the knitting industry of Pinghu and the weaving industry of Kaoyang is the artificial flower industry of Peking.<sup>5</sup> According to an investigation made by this Bureau last June, there were about 1,500 families engaged in the making of such flowers, and they all lived along the Flower Market Street and the Second, Third and Fourth Avenues outside Hatamen. The street is so-called because all buyers and sellers of paper and silk flowers gather near its east end at 6 o'clock every morning. These families bring their products to the Market, and sell them there, unless the products are made to the order of the small flower firms, of which there are about 130. With only a few workmen and apprentices, these firms manufacture and sell flowers in much the same way as the private families, although they sometimes obtain orders from outport purchasers and share them with the latter.

Different kinds of flowers as well as different parts of

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5. Investigation of the Bureau, June, 1926.



a flower are often made by different families, each specialising in one line. The leaves are manufactured by another set of workers, the paper-wrapped wires used as flower stems are prepared by still another, and the bone hairpins, to which the flowers are attached when worn by ladies as hair ornaments, are made by special workshops at Tamochang (打磨廠), which specialise in bone articles of all kinds. Indian silk, damascus, silk waste, cloth, Chinese and Japanese paper, araliaceae (*Tungtsao* 通草), paraffin, wheat flour, copper and iron wire, peacock feathers, imitation silver thread, cotton, sawdust and many kinds of native and imported dyes are among the raw materials used in this industry.

The chief difference between this and the Pinghu cottage industry is that here the working families are entirely independent of any factory or workshop, although they may, when they choose, take orders from it. In the Pinghu industry the laborers are really employees of the factories, and paid by them at piece rate, in spite of the fact that they work at home. In the Peking flower industry, the workers buy their own raw material and tools, and dispose of the products at the market themselves. They are able to do so, perhaps, because the tools are simple and inexpensive, and the raw materials can be bought from the local stores in small quantities. In Kaoyang, there are also many independent families selling their own products at the local Cloth Market, and the conditions are therefore a combination of both Pinghu and Peking.

#### Modern Factories.

The third kind of industrial unit in China is the modern factory. As an example of this the cotton mill is perhaps the most important, as the cotton spinning industry

is now the largest modern industry in China. According to the latest statistical table of the Chinese Cotton Mill Owners Association,<sup>6a</sup> which was for 1925, there were in that year 118 mills with 3,414,062 spindles in operation and a total capitalization of about \$288,000,000. As far as could be ascertained, at least 720,000,000 pounds of yarn were produced in that year.

The beginning of this modern industry was in 1890, when the well-known Viceroy Li Hung-chang first established a cotton spinning mill in Shanghai, with 65,000 spindles and 600 looms.<sup>6</sup> A little later, the weaving mill was burned down, and the Government was reluctant to invest more money in the industry. The spinning plant was sold to a private company specially organised for the purpose, and was re-named Hua Sheng Cotton Mill (華盛). Since the conclusion of the Sino-Japanese Treaty of 1896, foreigners obtained the right of establishing factories in Chinese treaty ports and the cotton mills of Jardine Matheson, Lao Kung Mow, (老公茂) (both British) and Jui Kee (瑞記) (German) came into existence one after another. By 1896 there were nine mills in Shanghai and Wusih, of which the more important ones of Chinese ownership were Hua Sheng, Ta Shun (大純), Yu Yuan (裕源) (Shanghai) and Yeh Ching (業勤) (Wusih). Su Lun (蘇輪) of Soochow and Ta Sen (大生) of Nantung followed, while Ta Shun was soon sold to the Japanese and became Mill No. 1 of the Shanghai Cotton Manufacturing Company—the first instance of the purchase of Chinese mills by foreign interests.

After the Russo-Japanese War came to an end, cotton piece goods found a good market in Manchuria, and the cotton mills were induced to instal more looms to supply

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6a. Including foreign mills. 6. 江蘇紡織業狀況。

the demand, thereby utilizing also their own yarn in a more profitable manner. By 1908 there were already 23 mills in Kiangsu alone, with 587,646 spindles and 3,066 looms. In 1918, the number increased to 34, with 997,238 spindles and 5,438 looms. The total capitalization was about \$35,000,000. The growth of the industry is shown by the following table.

Year	No. of Mills	Spindles	Looms	Total Capitalization
1910 (7)	23	587,646	3,066	
1918 (7)	34	997,238	5,438	\$35,640,000 approx. (10)
1919 (8)	29	659,752	2,650	
1920 (8)	37	856,894	4,540	
1921 (8)	51	1,238,902	6,650	\$90,130,000 approx. (11)
1922 (8)	64	1,593,034	9,817	
1923 (8)	54	1,493,672	8,581	
1924 (8)	58	1,650,004	10,461	
1925 (9)	69	1,881,822	16,381	\$136,980,000 approx. (12)

During and immediately after the European War there was a great boom to the cotton industry of China, because the supply of European yarn and piece goods was very much curtailed, if not entirely suspended. Many new mills were established by Chinese merchants, and a large number of spindles were installed every year. A setback occurred in

7. Mills in Kiangsu only, but including both Chinese and foreign, from 江蘇省紡織業狀況.
8. Chinese owned mills in all China, according to the statistics of the Chinese Cotton Mill Owners Association.
9. Not including four mills being installed.
10. Taels 14,689,000, \$1,950,000 and Yen 9,000,000.
11. Taels 31,685,000, and \$45,770,800.
12. Taels 46,215,000, and \$72,280,000.

1923, when instead of an increase, there was a decrease in the number of mills, spindles as well as looms, due to the closing down of some and the transfer of others to foreign companies. However, 1925 had more mills, spindles and looms than 1922, and 1926 showed further progress, so far as Shanghai and Paoshan were concerned.

At first only very low counts of yarn were produced by Chinese mills, and none above 20's. Later, new mills began to spin 32 and higher counts, although the majority of mills even now still produce coarse yarn. For such purposes Chinese and Indian cotton are quite well adapted, but for fine yarn American cotton, sometimes mixed with the indigenous Chinese variety, is generally used. The cultivation of a few American species on Chinese soil has been experimented with for some years, the Southeastern University of Nanking having done much in distributing American seeds to Chinese farmers to encourage their cultivation. Unfortunately, they produce good results only for a couple of years, and in the third or fourth year the cotton yielded is of about the same quality as the indigenous variety. In Chihli the farmers would not raise American cotton, because the harvesting season is late, and local time-honored custom allows anybody to pick cotton after the regular harvesting season of the indigenous species. Recently the Chinese mills are making use more and more of Indian cotton, which is much cheaper than that of America. As the former can only be ginned in English machines, it accounts for the installation of these machines in Shanghai and Tientsin mills during the last year or two.

#### **Flour Mills.**

As Shanghai is the principal center of the cotton industry, so it is also that of machine-milled flour. There

are more flour mills in Shanghai than in any other city, and the first mill, Tseng Yu (正裕), was established there by Germans in 1886.<sup>13</sup> Fow Feng (阜豐) (1900), Hwa Hsin (華興) (1902), Li Ta (立大) (1906) and Sen Ta (申大) (1906) followed, and at about the same time the first Mow Sing Mill (茂新) was established in Wusih, another important flour milling center as well as wheat market. Fu Sin (復新) (1900) is the first flour mill of Nantung, the home of the late industrial magnate, Chang Chien (張謇), and so far as can be ascertained, Hankow had its first mill in 1905—the Ho Feng Mill (和豐) of joint Chinese and British ownership. Shwang Ho Shen (雙合盛), the oldest Chinese mill in Harbin, in the center of a large wheat belt, was established in 1908 and there are many Russian mills in North, and Japanese in South, Manchuria. Although Tientsin had eight mills towards the end of 1926, it did not make an early start, as the first mill—the Shou Hsin Flour Mill (壽星), was organized by Sino-Japanese interests as late as 1915.<sup>14</sup> In 1919, it was affected by the anti-Japanese boycott, and the mill was closed up until 1925, when it was reorganized with purely Chinese capital under the name San Tsin Shou Hsin (三津壽星). Tsinan is another milling center with ten mills, (the number in existence when the city was visited by an investigator of this Bureau in 1924).

According to the investigator, who compiled a list of flour mills in China in 1924<sup>15</sup> from books, newspaper reports as well as personal investigation, there were in that year 116 mills capitalized at approximately \$15,000,000 altogether, and having a daily producing capacity of about 39,453 piculs (of 100 catties or 133½ pounds). Besides the localities

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13. 商業實用全書

14. Investigation of the Bureau.

15. 陳重民今世中國貿易通志

already mentioned above, there were mills at Ningguta, Aigun, Lungtsingchun, Kirin, Changchun, Fushun, Szepingkai, Dairen, Liaoyang (all in Manchuria), Peking, Tatung (Shansi), Chefoo, Tsingtao, Tsining (all in Shantung), Kaifeng, Sinhsiang (both in Honan), Chengtu, Chungking (both in Szechwan), Changsha (Hunan), Kishui (蕪水), Shasi, (both in Hupeh), Wuhu (Anhwei), Haichow, Taichow, Kaoyu, Chinkiang, Tsingkiangpu and Nanhwei (all in Kiangsu) and Yunnanfu (Yunnan). The list is admittedly incomplete, yet it includes most of the important Chinese mills, and gives an idea of the total capitalization and producing capacity. It may be safely presumed that the actual figures are higher than those given above. Year to year statistics, like those of cotton mills, are unavailable.

The development of the industry depends very much on the supply of raw material. Tientsin, Harbin, Hankow, Wusih, etc. have become milling centers because they are centers of distribution for Chinese wheat. The wheat of north Manchuria is the best, and that of Shantung next, according to a Chinese authority.<sup>15a</sup> The product of northern Kiangsu, especially the region around Hsuchow, Suchien (宿遷) west of Tsingkiangpu, is comparatively hard, because the soil is not very well adapted to wheat production. In southern Kiangsu, the farmers generally sell good wheat when the harvest is good, but when there is a bad crop and prices are high, they often adulterate it with sand, because even under such conditions it will be readily marketed. Hankow wheat has the same defect, although even without adulteration the product is already inferior to that of the northern provinces. Because Wusih is an important wheat market, Shanghai mills sometimes refuse to buy local wheat, but may be deceived into buying the

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15a. 商業實用全書.

same as Wusih wheat when it is first shipped to that city, where it is mixed with some low grade wheat of Nanking or northern Kiangsu, and shipped back again to Shanghai. The machinery of these mills is nearly all supplied by American firms.

In Tientsin the wheat comes from Chihli, Shantung, Honan and Manchuria.<sup>16</sup> Some mills send purchasing agents to the producing centers, while others buy from the local cereal markets, of which there are two, at Sichi (西集) and Peichi (北集) respectively. All wheat transported by junks along the Yu Ho river (御河) is concentrated at the former, and all by junks along the West river or by train along the Peking-Mukden Railway, at the latter. There are five grades of wheat, but 100 catties of the average grade will yield 78 catties of flour, of which 70 per cent is of first grade (of flour), 10 per cent second, and 20 per cent third and fourth grades combined. The principal markets of Tientsin flour, outside of the city itself, are Peking and Tongshan, although some quantities are also sent to Jehol.

Since the appearance of the modern mills in Tientsin, the old-fashioned hand mills have gradually died out. There were over 400 work-shops in this industry before 1916, with over 2,000 millstones, but in last year their number had decreased to less than 200, and they had between them only 600 or 700 millstones. They now produce corn, millet, bean and *kaoliang* flour instead of wheat, and electric power has taken the place of mules and horses. The eight modern mills consume every day about 10,000 sacks of wheat (each weighing 160 catties), and about 30,000 bales of flour (each weighing 49 pounds) are sold daily on the local market, of which about a half

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16. Investigation of the Bureau, November, 1926.

is the product of these modern mills:

Like the cotton mills, the Tientsin flour mills have gone over from the "foreman system" to the "supervisor system." When modern factories were established in China, the managers did not know how to deal with the laborers, and they were generally hired through the foremen, who had full power of employing or dismissing the men as he liked. Now graduates of middle and vocational schools, who have learned something about the working of the machines, are employed as supervisors, and hands are hired directly by the management and put under their supervision. Many of these young men are intelligent, understand some English terms of machinery and process, and are willing to explain things to visitors, especially those who are interested in industries. They also treat the laborers with more consideration than the former foremen, and it is very regrettable to find that most foreign owned mills in China still persist in the old system of contract labor, which has caused many strikes during the last few years through the arrogance of the foremen to the laborers. As is generally the case, the modern Tientsin mills do not supply food and lodging to the laborers as part of wage payments, as do the old-fashioned workshops, although one of them at least maintains a restaurant from which the laborers may buy their own food. Apprentices are still kept in these mills.

#### **Railways and Industrial Development.**

Among the factors that promote industrial development in China railways are one of the most important. For instance, Chowkiakow (周家口), Honan, was formerly a very important trading center in the country, but now Chengchow (鄭州) is the most important industrial town



of that province because it is at the junction of the Peking-Hankow and Lung-Hai Railways. Hsuehchow (徐州), Kiangsu, where the Lung-Hai crosses the Tientsin-Pukow Railway, has, due to the same reasons, superseded Tsingkiangpu (清江浦) on the Grand Canal as the leading town in northern Kiangsu. Although Tsingkiangpu is the northern terminus of steamship lines that navigate the Canal, the Lung-Hai Railway does not pass through the town, and there is little hope of future development. On the other hand, if a good harbor is constructed at Haichow, the eastern terminus of that railway, now that the railway has reached the coast, that city may easily rival Nantung or Wusih, of southern Kiangsu, if not Shanghai itself. The development of Shihkiachwang (石家莊), at the juncture of the Peking-Hankow and Chengting-Taiyuan Railways, formerly a small market town, is another good example of the influence of railways on industrial development.

As special investigators have been twice sent to Tsinan, Shantung, by the Bureau, a more detailed account of its industrial development through the influence of railways will be here given.<sup>17</sup> During the first visit, in the latter part of 1924, when a very careful study was made of industries in particular, there were 48 comparatively large Chinese factories engaged in the manufacturing of cotton yarn, beet sugar, paper, flour, matches, soap, vegetable oil, sewing needles, glass, bricks and tiles, enamelled ware, cement, dyestuffs, leather, strawhats, hairnets and knitted hosiery. The earliest of the then existing factories was an oil press established in 1909, while most of the others have come into existence since the Republic. It seems that wheat flour, leather tanning, matches and paper manufacturing are among the earlier industries that had

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17. Investigation of Bureau, 1924 and 1927.

a foothold in that city, the first factories in these lines having been established before 1916. Straw hats and hairnets were also manufactured at an early date, but these are chiefly due to the influence of foreign trade, and will be discussed more fully in that connection. There were nine flour mills with a total capitalization of \$5,900,000, not including one which is a branch of a Wusih mill. Tsinan would have had its share of cotton mills also if monopoly privileges had not been granted to the existing mill, which prohibited the establishment of any other mill within a radius of 30 *li* for 20 years. And all this industrial development has been due to the fact that the city is at the juncture of the Tsingtao-Tsinan and Tientsin-Pukow Railways. The former was completed in 1902 and the latter in 1911. The influence of the latter, which is a trunk line traversing four provinces, is much greater than that of the former; hence the more rapid developments since its completion.

#### **Foreign Trade and Industrial Development.**

The second conspicuous factor in China's industrial development is her foreign trade. This has three different aspects, which must be dealt with separately. In the first place, it is responsible for the industrial development of the treaty ports, which are the centers of foreign trade. Two generations ago, Shanghai was little more than a fishing town, but today it has a population of approximately 1,500,000, and is the first industrial city of the country. At the same time, about 40 per cent of China's foreign trade passes through Shanghai<sup>18</sup> and in shipping tonnage it ranks among the first five ports of the whole world. The growth of foreign trade of Tientsin during the last few years was

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18. 41.9 per cent in 1924 and 42.4 per cent in 1925.

very steady, and the port became a very close competitor of Hankow and Dairen for second place, Shanghai being always the first. The following are total trade figures (in 1,000 Haikwan taels) of Tientsin for the last nine years, compared with those of Hankow and Dairen :—<sup>19</sup>

Year	Total Tientsin Trade	Total Hankow Trade	Total Dairen Trade
1925	287,704	288,761	273,709
1924	251,695	282,450	240,672
1923	238,407	239,745	230,549
1922	244,516	206,105	220,010
1921	224,779	173,546	210,431
1920	173,482	169,951	203,773
1919	189,775	200,398	210,748
1918	153,138	165,162	165,824
1917	142,360	170,730	135,945

From 1917 to 1919, the trade of Tientsin gradually increased, but there was a setback in 1920, yet the setback was even greater for Hankow, and during that year and the two following Tientsin got ahead of the latter port. There was another setback in 1923, due to the Japanese earthquake, and then a steady increase. Turning now from foreign trade to industries, we find, according to the investigation of the Bureau, that the number of comparatively large factories established in Tientsin during the same nine years was as follows :

1925	5	1922	2	1919	6
1924	3	1921	10	1918	4
1923	4	1920	5	1917	2

The largest number of factories was therefore established in 1921, the year when foreign trade recorded the largest increase, namely, 51,297,000 taels. The increase of trade

19. Customs report.

in 1919 over that of 1918 was the second largest, and in that year the increase of industrial establishments was also the second largest. There was a decrease in the number of new factories from 1919 to 1920, corresponding to the setback in foreign trade. Similarly, other correspondences may be found for the years 1922-1925, although there were more new factories in 1923 than were justifiable by trade developments, but they were probably brought into existence on account of the prosperous trade of the previous year, and at least the two flour mills established in that year were known to have been promoted in 1922. Three of the five cotton mills were installed in 1921, while of the nine flour mills four were really organised during the flourishing trade period covering 1921 and 1922.<sup>20</sup>

The second aspect of the influence of foreign trade on industrial development is its effect on articles for export. The influence here is very direct, foreign demand being responsible for greater production, and greater production usually, if not always, means the establishment of more workshops and factories. The large number of bean oil presses in Manchuria is a good proof of this statement. The rise of steam silk filature in Shanghai is yet another. In Shantung, the foreign demand for lace, strawbraid and hairnets had resulted in the growth of three flourishing cottage industries over a large part of the province, until the demand fell off in recent years, when these industries also waned. The fur industry of Suanhwa, described near the beginning of this paper, is also dependent to a great extent on the foreign market. In fact, there are quite a few articles of manufacture which would hardly be of any significance were it not for the demand in foreign countries.

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20. Of course the number of factories is too small to make the conclusions final.

In recent years, however, as the Chinese people gradually take on foreign habits, a domestic demand is created for some of these articles, but this will be discussed under the next heading.

#### Foreign Trade and Domestic Demand.

Some very conspicuous instances of domestic demand for goods manufactured in imitation of imported articles are matches, cigarettes, canned food, cement and knitted hosiery. Previous to intercourse with foreign countries, there were no matches of the modern type, and flint and iron were the common means of ignition. But since the introduction of modern matches, the flint and iron outfit has practically disappeared from cities and towns, and even in rural districts people prefer the former to the latter. The Tan Hwa Match Factory of Peking, (丹華), for instance, sells good matches in boxes to urbanites, and those that are partly broken, or otherwise not in good form, to dealers at so much a catty (measure of weight), and the latter in turn sell them to the farmers at so many sticks for a copper.<sup>21</sup> In Changsha, special sulphur matches are manufactured for the farmers in the interior of the province, who still prefer these to ordinary matches.<sup>22</sup> There are in China at present, so far as can be ascertained from the Bureau's records, 134 match factories and 15 factories making sticks, boxes and other accessories.

Although China produces good raw material for making cement, such an article was never manufactured before it was imported, but a mixture of clay and lime was used for most construction purposes where cement is now used. Gradually the Chinese learned to appreciate the superior

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21. Investigation of the Bureau, 1926.

22. Investigation of the Bureau, 1923.

qualities of the latter, and now there are at least 15 cement factories in China, of which Chee Hsin (啓新) at Tongshan, Chihli, is the oldest and largest. Of canned food factories there are about 30, and they have been instrumental in preserving certain perishable goods, which would otherwise have been wasted. Changli, (昌黎), Chihli, for instance, produces large quantities of fruits, especially pears, but much had been left to rot on the trees before the Sing Chung Canning Factory (新中) was established. Now they are preserved in cans and marketed in Peking, Tientsin and even far away Shanghai.<sup>23</sup>

At first the Chinese would not smoke cigarettes, because they were accustomed to smoking tobacco in pipes. A foreign importer of Shanghai (said to be the Mustard Company) started an "educational" campaign by distributing cigarettes free on the streets and having Chinese employees smoke them in the presence of other Chinese. Gradually the latter took to this form of smoking, and nowadays there is no place in China where one cannot find cigarettes on sale. The largest manufacturing company in the country is the British American Tobacco Company, while the Chinese concern, Nanyang Brothers, runs a close second. Some 40 other Chinese and foreign factories are found in various parts of the country, mostly in Shanghai, although there are some in such interior provinces as Shansi and Yunnan. The first company distributes American tobacco seeds to the farmers of Shantung, Honan, Anhwei and other tobacco producing provinces, and the industry has become more and more indigenous to the land. Of knitted hosiery much has already been said in connection with the cottage industries.

In order to encourage such manufactures, especially on

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23. Investigation of the Bureau, 1927.

the part of Chinese themselves, the Government has regulations which exempt all machine-made articles in imitation of imported goods, generally called "factory products" or *chi-chih-yang-ho* (機製洋貨) from all *likin* levies, after having paid a tax of 5 per cent. This measure has produced good results, as will be seen from the statistics in the paragraph following.

#### Effect of Boycotts.

When, for one reason or another, a boycott is declared by the people against some foreign nation, these Chinese factory products as well as imports from other countries are also much benefitted. In fact, this was how the Hangchow umbrella industry gained its foothold.<sup>24</sup> In 1908, on account of a dispute concerning a Japanese ship named *Tatsu Maru* (二辰丸), there was a widespread boycott against Japanese goods. The urban population at that time used imported umbrellas, mostly from Japan, but the boycott made these very unpopular, and a small manufacturer of Chinese paper umbrellas in Hangchow whose workshop is named Sun Yuan Hsin (孫源興) took this opportunity to improve his products to supplant the Japanese goods. The umbrellas were made smaller and lighter, hooked handles substituted for the former straight ones, and the flowery designs on the paper were also improved. They immediately became very popular, many other manufacturers followed suit, and these improved paper umbrellas were marketed in many Yangtze provinces.

At present there are about 20 manufacturers in Hangchow engaged in the production of these improved umbrellas, making use of Fuyang (富陽 in Chekiang province) bamboo for the ribs and paper of Eastern

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24. Investigation of the Bureau, June, 1927.

Chekiang districts for the shade. Later, the Ming Sing (民新) and Sing Ya (新亞) factories were also established which manufactured silk and cloth umbrellas after foreign patterns, with steel ribs imported from Germany. Kaoyang cloth, referred to above in connection with cottage industries, became popular also on account of a boycott against Japan in 1916, as a reaction to the Twenty-one Demands made by that country.

Some statistical data concerning the exportation of Chinese factory products are illustrative of the growth of such industries. Since 1921, the Customs reports show the value of these products exported, and the increases in the following years are remarkable. The statistics follow:

1921	Haikwan	tails	3,724,813
1922	"	"	5,091,302
1923	"	"	12,145,616
1924	"	"	18,810,291
1925	"	"	15,378,913

The decrease in 1925 was probably due to the withdrawal of these products from export to supply the domestic demand, as well as to the numerous strikes in Shanghai since the May 30th Incident, which affected Chinese mills also. Exportation of cotton yarn fell from Tails 7.5 million to 3.7 million, and the decrease of cotton piece goods of various kinds totalled approximately Tails 600,000. The other important factory products exported are socks, towels, gunny bags, candles, cement, electric lamps, machine milled flour, soap, wood pulp, musical instruments and matches. The exportation of the last article reached in 1923, when the industry was at its height, the value of Tails 1,289,152. Although some of the factories are owned and operated by foreigners, the growing popularity of such "factory products" and the increasing quantities exported constitute the third



important aspect of the influence of foreign trade on industrial development in China.

**Other Factors Promoting Industrial Development.**

Besides modern communications and foreign trade, three other factors have had much influence on China's industrial development. One is the availability of raw material, which explains the growth of the flour and bean oil mills in Manchuria, the silk filatures and silk weaving mills in Kiangsu and Chekiang, the iron works and wood oil refineries in Hankow, the glass factories near Poshan, Shantung, the cane-sugar industry of Kwangtung, the vegetable dyestuff industry of Kiangsi, etc., etc.

A second is the availability of skilled labor, which is particularly important where the industry is of a handicraft nature. The rug industry flourished in Peking because some Tibetan rug makers first taught the art to Peking artisans, and it took a long time before the Tientsinese learned the trade from their Peking brothers and the industry began to prosper there.<sup>25</sup> Now, on account of the better facilities for foreign trade at Tientsin, the center of the rug industry has practically shifted to the latter city. For the same reasons concerning skilled labor, the cloisonne and artificial flower industries have been confined to the National Capital and only recently Shanghai merchants offered very high wages to engage artificial flower makers from Peking, which involves a three-year contract at practically double pay and provision for passage both ways.<sup>26</sup> The localisation of the jade industry in Peking, Soochow, Canton and a few other cities is due to the same cause,<sup>27</sup> although the raw material comes principally from Burma, Yunnan and Sin-

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25, 26, 27. Investigation of the Bureau, 1926.

kiang, and so far as that is concerned, the industry might as well have been localized in the northwestern and southwestern provinces.

A third factor responsible for industrial growth is the effort of some individual or individuals in introducing an industry into a particular locality. Usually there are other factors favoring the introduction, but personal effort is responsible for the introduction into one place instead of another. For instance, Nanyang (南陽), Honan, is known for pongee silk because about 70 years ago, a native of Tientsin named Yin Ju-pi (殷汝璧) became the city magistrate, and taught the people to improve their silk fabrics because he himself came from a family which had long been in the silk business.<sup>28</sup> The product of his improvement is known as Yin silk, and is marketed in many provinces. Had he been the magistrate of another district, Nanyang might never have become a producing center of pongee silk.

Similarly, the industrial growth of Nantung, Kiangsu, is principally due to the efforts of the late Chang Chien, who was a native of that city, although the various industries he promoted there could have equally been established in any of the neighboring districts. Nanchung (南充), Szechwan, has a flourishing industry in making noodles, because some of its merchants imported modern machinery from Hankow and started the industry there, while other wheat producing districts of the same province happened to be slow in promoting the business.<sup>29</sup> Given a start by some individual, plus the momentum characteristic of industrial growth, and an industry takes root in a locality, or a town grows steadily into an industrial city. Wusih,

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28. 商業實用全書

29. 南充實業雜誌

Kiangsu, owes a good deal to such circumstances for its rapid growth, and the members of the Lao (勞) family are among the individuals responsible for it.<sup>30</sup>

#### Economic Advantages of Shanghai.

In this connection a mistaken but popular notion of many foreign residents in China, and even of some Chinese also, may be discussed with advantage. Shanghai has become the principal industrial center of China, according to this notion, because there are foreign settlements under foreign rule,<sup>31</sup> and that foreign rule spells security of life and property. While such security *is* very important to industrial development in general, it is a mistake to consider it the cause of Shanghai's industrial growth. The flocking of refugees to Shanghai may cause phenomenal rise in rent and prices, swell the pockets of the local landowners and tradesmen, and present superficial signs of prosperity, yet industries do not develop through mere congestion of population. No amount of security in a small area of a few square miles can make industries prosper if an adequate supply of raw materials is not maintained by good communications facilities, and the products marketed through the same means.

The principal advantages of Shanghai are (1) its situation at the mouth of the easily navigable Yangtze river, which traverses some of the richest provinces of the country, (2) the possession of a good harbor where foreign and coastwise shipping lines converge, and (3) the modern transportation facilities of the Shanghai-Nanking and Shanghai-Hangchow Railways. If, by blockade

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30. Investigation of the Bureau, 1926.

31. There has been Chinese representation in the municipal council only since the May 30th Incident of 1925.

or other measures, all or even a large part of such communications were cut off, and with it the foreign and domestic trade, it would not take long to reduce the city to the fishing town which it used to be, or more probably, to a mere seaside resort of foreigners. The effect of the severance of economic relations between Canton and Hongkong in 1925 on the trade and industries of the latter place is sufficient proof of this statement. Finally, even the so-called security of Shanghai is more apparent than real, as there has been frequent fighting in and around the city during the last twelve years, and during peaceful times there are in Shanghai far more cases of kidnapping, murder, burglary, incendiarism and other inherent evils of modern industrial cities than in most inland towns. Hence, in this paper, security of life and property, though important when reference is made to the general conditions of the country, is not considered a factor in the development of specific industries and cities, because it does not so apply.

#### **Obstacles to Industrial Development.**

Turning now from factors that promote industrial development to those which obstruct it, we shall first refer to *likin* and similar inland transit taxes as the greatest of all obstacles. The center of the rug industry, referred to a few paragraphs back, has shifted from Peking to Tientsin partly because of the facilities for foreign trade, and partly because the manufacturers in the latter city can avoid three taxes which the Peking manufacturers must bear. Also, the raw material, wool, has to pay seven taxes and assessments when transported from Tatung, Shansi, to Peking, a distance of only 672 *li* (about 220 miles).<sup>32</sup> Hankow brick tea, when transported to Kalgan, had to pay 13 levies of *likin*

32. Investigation of the Bureau, 1927.

and native customs, and the tax burden on a box of tea valued at Taels 7.50 (about \$10.50) amounted to \$3.19, or about 30 per cent.<sup>33</sup> This was two years ago, and now the militarists are collecting more and heavier taxes on the way.

On the other hand, the nominal 5 per cent tariff means so little burden on foreign imports that they can easily undersell Chinese products of the same grade. The Chee Hsin Cement Factory of Tongshan, near Tientsin, finds it cheaper to buy German gypsum than that produced at Yingcheng, Hupeh, because the latter has to bear much heavier taxes and monopoly fees than the 5 per cent tariff on the imported article.<sup>34</sup> Japanese cotton yarn and piece goods compete very keenly with similar native products. The larger capital and lower production costs of large scale industry in foreign countries give them an advantage over Chinese infant industries, and the low Treaty Tariff deprives China of one of the most important means of compensation. Also, there is the problem of competition of foreign factories in Chinese territory which too are entitled to low tax rates by treaty stipulation. These must be dealt with through revision of the treaties and restoration of tariff autonomy to China. As there were simultaneous declarations at the Tariff Conference by China and the Treaty Powers looking forward to restoration of tariff autonomy at the same time with *likin* abolition, these two questions are therefore closely related.

The second factor is the lack of uniformity in currency and in weights and measures. From the point of view of industry and trade, these two things, currency and weights, are essential measures in all transactions, the former fixing

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33. Investigation of the Bureau, 1925.

34. Investigation of the Bureau, 1927.

the value and the latter, the physical unit. When they are not uniform throughout the country, or even a large portion of the country, trade cannot prosper and industry cannot develop along its natural course. A speculative element is introduced into all transactions which often incurs losses to traders, especially those who go into new markets, and this in turn means that sales of industrial products cannot be easily extended. Of course the Yuan Shih-kai dollar, or *yuan*, is gaining wider and wider circulation in the country, but there are still many different kinds of silver taels and paper money that circulate side by side with the dollar, and at certain cities they even form the standard of all values. The same is true with weights and measures, in spite of the fact that the Government has adopted official standards, because they are maintained only in Shansi. Unfortunately, the importance of this factor is often overlooked.

Unsettled political conditions, together with frequent fighting in the country, are no doubt a most important obstacle to industrial development. They not only directly affect industries, but are also responsible for the maintenance of the obnoxious *likin* system and the lack of uniformity of currency and weights, and thus indirectly obstruct industrial development through these factors. Moreover, they prevent the proper maintenance and extension of railway lines, which, as has been pointed out above, is perhaps the most important factor in promoting industrial growth. There are now altogether only about 9,000 miles of railways in China, which means approximately one mile of railway for every 475 square miles of territory, or 48,000 population. That this is absolutely inadequate is beyond question, but partly due to unsettled political conditions and partly to contracts of concession with foreign companies, the extension of

railway lines has been greatly hindered. The foreign concessionaires have contracted for many lines, but in some cases have not laid a single mile of roadbed, while their contracts prevent others from undertaking the construction. In other cases, the construction of one line prevents the building of others which may in any way be considered parallel to the existing one, or rather, which may compete for traffic with the latter.

To some extent, certain foreign Powers, for the protection of their economic interests in China, have exerted their influence on behalf of certain Chinese political parties. They therefore become instrumental in maintaining the latter in power, thus further complicating the political situation, and often delay its solution. As this paper does not purport to deal with political questions, it is sufficient to point out that Chinese politics has its international aspect, and that foreign economic interests in China—in trade, industries and railways—while in some respects beneficial to China, are also in other respects responsible for obstructing the industrial development of this country. The Treaty Tariff, the railway contracts and foreign influence in Chinese politics, are some of the factors of the latter nature, and proper solutions must be found for them before Chinese industries will have untrammelled growth.

## II.

### The Financial Organization of China.<sup>a</sup>

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The Chinese financial organization is characterized by lack of uniformity, which baffles every attempt at a comprehensive study, but it is nevertheless a very efficient organization, and strikes everyone who studies it with wonder and admiration. Until very recently, and even now, with the exception of a few institutions borrowed from Western sources, the whole scheme has been developed exclusively in accordance with Chinese ideas and customs, and we are astonished to find that the result of such independent development has been in certain instances almost identical with Western institutions, as if they had been the progeny of the social and economic forces of a single society. In order to show the similarity of our financial institutions to those of the West, I shall enumerate the striking resemblances as follows :

1. There were in China, before the introduction of Western ideas, general banking institutions under various names as *hwei-hua-chuang*,<sup>1</sup> *piao-hao*,<sup>2</sup> *kuan-yin-chien-chu*,<sup>3</sup> which handled business such as foreign banks handle, acting as safekeepers of funds and dealers in credit.

2. There were institutions which served as *bankers' banks* and held the reserve of the smaller institutions.

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a. A paper read before the Tsing Hua Forum in February, 1918, and revised and brought up to date in July, 1927.

1. 匯劃莊 2. 票號 3. 官銀錢局



3. There was a *system of clearings* by which the use of actual money was minimized, and the system was very much like that of the Western nations.

4. There was *paper money* which corresponded to the credit and fiat monies of the West.

5. There were the three main classes of *credit instruments* (three from the legal point of view) which exist in the West—namely, checks, promissory notes, and bills of exchange—and they were issued under similar terms.

6. There was a *money market* in every city controlled by a well-organized body.

7. There were certain *financial centers* in the country which controlled the money markets of the surrounding cities and formed with them a well-coordinated system, which held the main part of the nation's reserve, and which were again coordinated to form a hierarchial system very much resembling the reserve and central reserve city system of the United States before the promulgation of the Federal Reserve Act.

8. There were *official and market rates* of interest similar to the official and market rates of discount of the most well organized financial countries.

9. There was a *system of domestic exchange*, together with a system of correspondents, which was as efficient as any corresponding system in the world, when we take into consideration the extensiveness of territory and inadequate transportation facilities.

The above shows how far China's financial organization resembles that of the Occident, and gives us a general idea of the subject under discussion. To further elucidate the subject, we shall now proceed to point out certain peculiar characteristics of this financial organization, which, with certain modifications, still exists at this time.

### Three Characteristics.

In the first place, our financial organization has been evolved, not only free until now from foreign influences, but also entirely independent of either Government help or control. It is the habit of our merchants to depend as little as possible on the Government. The English joint stock companies and joint stock banks started business after they had secured special chartered privileges from the government. English traders received subsidies. German business has partaken even more of a quasi-public character. Many German industries are entirely under government management or supervision. In China, on the other hand, the business world has received little help from the Government whatsoever, not even in the most legitimate manner.

Not only this, but the businessmen even have a currency of their own, different in a not insignificant degree from that of the Government. Yet their currency is everywhere the prevalent money of account, while the "official currency" is used only on special occasions. By "official currency" I mean the *Ku-ping tael*,<sup>4</sup> the *Tsao-ping tael*,<sup>5</sup> the *Haikwan tael*,<sup>6</sup> the old dragon dollar and at present the Yuan Shih-kai silver dollar. The merchants used the *Ku-ping tael* when they had to make payments to the public treasury of the Central Government, the *Tsao-ping tael* for payment of taxes on agricultural land, the *Haikwan tael* for import and export taxes; but in every city the prevalent currency was always some other *ping* established by business usage, as the *Kung-fa*<sup>7</sup> of Peking, the *Hang-hua*<sup>8</sup> of Tientsin, the *Kuei-yuan*<sup>9</sup> of Shanghai, the *Sou-ma*<sup>10</sup> of Canton, or the *Yang-li*<sup>11</sup> of Hankow. The foreign dollars, notably the

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4. 庫平

5. 漕平

6. 關平

7. 公陸

8. 行化

9. 規元

10. 司馬

11. 洋例

*Caroline*,<sup>12</sup> the *Mexican*<sup>13</sup> and the *Hongkong British dollars*,<sup>14</sup> were first introduced by the merchants while the Government still persisted in using silver taels. Besides, the Government dollars are supposed to be seven *maces*<sup>15</sup> and two *candareens*<sup>16</sup> (*Ku-ping*) in weight, but their value in terms of silver fluctuates beyond the control of the Government. The bankers of each locality decides upon the value of these dollars every day, and the variation may be as great as three or four *candareens* (that is 5%) from one month to another. In the same way, and to a greater extent, the value of Government paper money, subsidiary silver coins, and copper cents are all subject to the revision of the merchants. The Government, unlike foreign governments, has really no power to make any money legal tender for any definite amount, because the money standard in each locality is one fixed by the business men themselves, and all the Government monies are computed at varying rates with respect to the standard and to each other.

The second characteristic of our financial organization is the importance attached by the merchants to personal credit. Wagel, in his books on Finance in China and Chinese currency and Banking, makes the bold statement that there is no credit in China in the modern sense of the word. This is not quite true. It is not our purpose here to enter into a discussion of the theory of credit, or to enumerate all the definitions that have been formulated concerning this important economic phenomenon. That has been done by Prendergast in the opening chapter of his book entitled "Credit and its Uses." We shall only here state the results reached by him after a careful analysis of the subject. According to him, the principles involved in credit are:

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12. 本洋 13. 鷹洋 14. 站人洋 15. 錢 16. 分

A. That it rests largely on confidence, trust, faith, and good opinion.

B. That it is not moral character *per se*, but business reputation that establishes and maintains good credit.

C. That it is a power inherently resting upon the qualities enumerated (in A) to borrow money or any other class of property.

D. That one of the principal elements entering into credit is that of futurity, or a deferred fulfilment of an obligation.

Or, to put it more concisely, we may borrow the definition of Professor Bullock that credit is "the power to secure commodities or services at the present time in return for some equivalent promised at a future time." This definition and this analysis are both given by modern authorities on finance, and they of course explain credit in the modern sense of the word. In this sense, certainly, we cannot say that China has no credit.

#### **Importance of Personal Credit.**

What is really peculiar to credit in China's financial organization is that personal credit is the most important thing. For convenience sake, we may classify credit into four kinds; namely, personal, institutional, public and cooperative. The first, third, and fourth are standard terms which need no explanation. By institutional credit we mean the credit of private, commercial institutions *per se*, as different from that of the officers or managers who can obtain credit by their personal business reputation or ability. This is the most prevalent kind of commercial and banking credit in Western countries, although, strange to say, no definite term has been given to it by eminent economists.

In China, on the other hand, no matter whether the credit is obtained for a single person or a firm (be it commercial or financial), it is usually the business ability and reputation of the individual proprietor or manager that counts. The Chinese businessman gives credit to a firm, not so much because he has good faith in the firm itself, but because he knows the manager, or some other intermediary who approaches him on its behalf, to be reliable and trust-worthy. This explains why new business is hard to start, while old ones, though of questionable character, can often obtain credit readily. It also explains why Chinese corporations seldom sell bonds, because bonds represent institutional, instead of personal, credit, although, in this case, other factors also enter into consideration. In short, the personal equation is of the greatest importance in China,—in business, in social relations, as well as in politics,—and all credit is based upon personal ability and reputation.

The third peculiarity of our financial organization is the one-sidedness of its development. Private finance has two aspects: what we may call current and investment. Current finance is that which is handled by commercial banks, and investment finance by investment agencies. According to the distinction made in economic theory, current finance has to do with exchange, while investment finance has to do with production. In business parlance, the former facilitates trade, while the latter promotes industries. Our habit of over-emphasizing the former and neglecting the latter has induced some to think that finance has to do mainly with exchange operations, but a moment's reflection will show how equally important is the financing of productive industries. The investment banks, the underwriting agencies, the stock exchanges, the insurance

companies, the savings banks,—all these are indispensable parts of a perfect financial organization.

In China, however, these have only been newly established after foreign examples, but have undergone little development. The points of resemblance between our financial organization and that of the Western countries enumerated some paragraphs back plainly show that the parallel stops short of this point. Until recently there has been no institution or practice in China that corresponds to investment finance in the West. The reason probably is that old Chinese industries are on a small scale, have quick turn-overs, and can be financed like trading firms. This is one of the striking features of our financial organization, and any further development in our system must make up this deficiency in order to make our financial organization perfect in the modern way.

#### **Classification of Financial Institutions.**

Having considered the peculiar characteristics of China's financial organization, we shall now describe and classify the various kinds of financial institutions. The following classification is based on the distinctive functions of the institutions.

1. Shansi and other native banks.
2. Modern Chinese and Sino-foreign banks.
3. Foreign banks.
4. Cooperative credit societies.
5. Quasi-financial institutions.
6. Special subsidiary institutions.

The Shansi banks had their origin during the reigns of Chien-lung and Chia-ching<sup>17</sup> of the Manchu dynasty

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17. 乾隆, 嘉慶

(1796-1820 A.D.) At that time, a native of Pingyao, Shansi, named Lei Lu-tai,<sup>18</sup> had opened a dyestuff store at Tientsin with the hong-name of Jih Sheng Chang,<sup>19</sup> with capital supplied by a Mr. Li of Ta-pu-chun village.<sup>20</sup> Of the dyestuffs a green copper compound<sup>21</sup> (probably green vitriol) came from Szechuen, and the firm had to ship sycee silver to that province to make purchases with. Gradually it was found cheaper to collect payments for other firms in Szechuen or on the way, and use that money for purchasing the dyestuff at Chungking, than to ship silver all the way from Tientsin. The other firms in Tientsin and Peking issued orders to pay to their branches and entrusted them to the travelling agents of Jih Sheng Chang, authorising them to make collections, while sometimes the branches also asked them to collect in Tientsin and Peking. Thus a system of domestic exchange was evolved and Jih Sheng Chang became the first exchange bank of Shansi.<sup>22</sup>

Following the example of Jih Sheng Chang, Mao Feng-hui,<sup>23</sup> also a native of Pingyao and manager of Yu Tai Hou cloth store<sup>24</sup> started exchange business in connection with his firm, and one after another Shansi tea, silk, cloth and pawnshop merchants in the Yangtze Valley, and fur and miscellaneous goods merchants in Peking and Tientsin went into the business. However, it was not until the first years of the Hsien feng reign<sup>25</sup> (1851-1861 A.D.) that special exchange banks were organised, and these soon became so numerous that they were classified into three groups: *Ping-pang*<sup>26</sup> or banks with head offices at Pingyao,<sup>27</sup> *tai-pang*<sup>28</sup> or those with head offices at

18. 雷履泰 19. 日昇昌 20. 達蒲村 21. 銅綠

22. The account of Shansi banks is based on investigations of the Bureau in Shansi in June, 1925.

23. 毛鳳翹

24. 蔚泰厚

25. 咸豐

26. 平幫

27. 平遙

28. 太幫

Taiku,<sup>29</sup> and *chi-pang*<sup>30</sup> or those with head offices at Chi-hsien.<sup>31</sup>

At that time the Taiping Rebellion was raging in all the provinces south of the Yellow River, and merchants, as well as Government offices, found it safer and more convenient to remit money through these banks than to ship actual silver. Wealthy people entrusted their funds to the banks for safe-keeping, demanding only two or three per cent interest per annum, while the latter were able to loan them out at ten or more per cent. For these reasons the large banks as Jih Sheng Chang and Po Chuan Tung<sup>32</sup> had a few million taels of deposits, although their capital was only about 100,000 taels.

#### Capital Shares and Labor Shares.

The internal organization of these banks is of special interest. The best known of them, Po Chuang Tung, for instance, had a capital of 100,000 taels, which was considered as ten shares. The managers and staff members of the head and branch offices were entitled to twenty shares, without contributing anything to the capital. The former were called *tsai-ku*<sup>33</sup> and the latter, *jen-ku*<sup>34</sup>, which may be translated into capital and labor shares respectively. This is a common practice with Shansi and Shantung merchants of any trade, and that was one of the reasons why their business prospered. The manager of an important branch may be allotted one whole share, and a senior assistant, half a share, the equivalents of ten and five thousand taels respectively. Every four years the accounts were balanced, and profits distributed, each share receiving ten to twenty thousand taels. The managers had full power to

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29. 太谷

30. 祁帶

31. 祁縣

32. 百川通

33. 財股

34. 人股



run the business as he saw fit, to employ or dismiss assistants, to make loans or investments, etc. Although the capitalistic proprietors or partners had to bear unlimited liability for debts and losses incurred, they had no voice whatever in the management.

From this it might appear that the managers had too much privilege without responsibility, but it was not true, because the sense of responsibility had been carefully inculcated in these men before they became managers. They must first start out as apprentices, and as such certain requirements must be first fulfilled. They must be, in the first place, natives of the same city to which all other officers and employees of the same bank belonged, which meant one of the three places, Pingyao, Taiku and Chihsien. Every year an apprentice must pay 20, 50 or 100 taels to the bank for the privilege of learning the trade. His family was put under strict surveillance by the bank and his letters were censored by the officers.

Even at the end of his apprenticeship, his accounts were periodically examined, and his body and effects searched. If any dishonesty were discovered, his property, as well as his personal freedom and that of his family, would be forfeited, and he and his family would remain in bond to the bank until the misappropriated fund was paid. While he was entitled to live at the expense of the bank, within prescribed limits, the profits allotted to him at the end of every four years were kept in the bank as a surety for the faithful discharge of his duties, until he became manager of a branch, and sometimes not even then. It usually took 20 or 30 years of continuous service to become general manager, and at any stage, if dismissed on account of dishonesty, he would forever be an outcast of the business world.

Thus, the managers were thoroughly trained to be honest and responsible, but unfortunately not in modern business conditions and banking principles. Consequently the Shansi banks were driven out of existence through competition of modern banks and their own misguided investments in speculative rubber estates. Although it is generally believed that the Revolution of 1911 marked the end of the Shansi banks, there were according to Chinese records 130 of them in Shanghai in 1912, 199 in 1913 and 12 in 1914. Even now there are still a few there and elsewhere, although their prestige is forever lost.

The capitalization and system of administration of other native banks more or less resemble those of the Shansi banks, although the rules are in most cases less strict. Though not restricted to natives of a few particular cities, the officers and employees of each bank usually come from the same city, which gives rise to the so-called *pangs*, each *pang* being a group of banks organized and managed by the natives of some particular locality. This however does not mean that these banks always do business in their native cities. Oftentimes, they are established elsewhere, and have no branches in their native cities at all. The number of branches of this class of banks is much smaller than that of the Shansi banks, and that was why they depended upon the latter for remitting money from one locality to another.

In general we may divide these ordinary banks into three sub-classes according to the extent of their business activities. Those with branches or correspondents do business beyond the city, and are called *hwei-hua chien-chuang*.<sup>35</sup> Those which do business in the city only are called *tiau-ta-chien-chuang*.<sup>36</sup> Those which merely carry

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35. 匯對錢莊

36. 挨打錢莊

on money-exchange business are called *ling-tuei chien-chuang*.<sup>37</sup> The distinction between "cash" and "silver" business is of no great significance. Much more will be said of these banks in connection with banking practice later.<sup>38</sup>

#### Development of Modern Chinese Banks.

Modern Chinese and Sino-foreign banks belong to the second class of financial institutions. Modelled after Western patterns, the first modern Chinese bank is the Commercial Bank of China,<sup>39</sup> established in 1897, and surviving till the present day. The promoter was Shen Hsuan-huai,<sup>40</sup> one of the high Government officials of the Manchu dynasty who introduced modern ideas into China. In the 30th year of Kwang-hsu<sup>41</sup> (1904), the Board of Finance, then known as *Hu-pu*,<sup>42</sup> organised the *Hu-pu* Bank with a capital of \$4,000,000, a half of which was to be subscribed by the Government and the other half by private individuals. *Hu-pu* later became *Tu-tse-pu*<sup>43</sup> and the bank was renamed Ta-ching Bank<sup>44</sup> in 1908, meaning the Bank of the Manchu Dynasty. It was then specifically provided that all public funds must be deposited with it or its branches.

After the Revolution, it became the Bank of China<sup>45</sup> with its capital increased to \$60,000,000, although till the beginning of 1926 only \$19,760,200 had been paid up. It has a President, a Vice-President, nine Directors and five Censors. At first anybody might be appointed to the presidency and vice-presidency, but since 1917, after amendment of the bank charter, only Directors may be appointed to the posts, and these, like the Censors, had always been elected by the

37. 零兌錢莊  
39. 通商銀行  
42. 戶部  
45. 中國銀行

38. 張公權各省金融概況  
40. 盛宣懷  
43. 度支部  
41. 光緒  
44. 大清銀行

shareholders. The Government has sold some of its shares, and the Bank has become more and more a private corporation with special privileges and responsibilities of a state bank, like the Bank of England. When the President and Vice-President were appointed by the Government, political parties fought hard for the positions, and the personnel changed with every change of the Cabinet. Since 1917, however, there have been few changes, because the large stockholders have remained almost the same. As the Bank is privileged as the principal depository of Government funds, it is not allowed to charge more than 6% p.a. on loans to the Government. Its right of note issue is shared with many Chinese and foreign banks in China.<sup>46</sup>

Another Government bank, the Bank of Communications,<sup>47</sup> was organised in 1907, when it was found necessary to raise money for the redemption of the Peking-Hankow Railway from the Belgian contractors. At first it was intended to be capitalized at \$5,000,000, 40 per cent of which was to be contributed by the Government. The bank was also made a depository of public funds, especially railway revenues. These circumstances made it a state bank, although the bank officers are now entirely elected by the shareholders.<sup>48</sup> The Government has also established the Bank of Agriculture and Commerce and other special banks, and provincial governments have mostly reorganised the old-fashioned *kuan-yin-chien-hao* into modern provincial banks.

Meanwhile, private banks of the modern kind also gradually came into existence, but most of the large institutions existing today have been established since the Republic. Down to 1912, the First Year of the Republic, there were only nine modern Chinese banks, both Govern-

46. 周葆鑾中華銀行史, also records of Peking Bankers' Association.

47. 交通銀行

48. 周葆鑾中華銀行史, 又銀行公會紀錄

ment and private. The number increased to 14 in that year, as far as it could be ascertained, and eight more were established between 1913 and 1917. The total suddenly reached 43 in the following year, and 56 in 1919. Due to the great famine and general business depression, the next year was one of financial inactivity, yet 14 new banks came into existence. As business began to revive, an unusually large number of new banks appeared in 1921, 34 having been established in the first half-year alone.<sup>49</sup> Some of the mushroom growth in these years did not last long, and the frenzied development was arrested until there were in existence in 1926 141 banks, according to the records of the Government Bureau of Economic Information, with a total authorized capital of about \$375,150,000, of which \$158,000,000 had been paid up. The capital of individual banks ranged between \$50,000 and \$60,000,000. Reserve funds amounted to approximately \$16,875,000.

In the same year there were 20 banks of joint Chinese and foreign capital, totalling in various currencies \$12,045,230, Taels 4,500,000, Francs, 10,000,000, Roubles 55,000,000 and Yen 28,359,000, paid up. The paid up capital of purely foreign banks, numbering 43 in all, amounted to \$20,000,000, Taels 7,500,000, £6,644,160, U.S. \$8,000,000, Francs 150,400,000, Guilders 135,000,000 and Yen 410,870,900.

The distribution by nationality was as follows :

British	4	Sino-British	0	Total	4
American	2	Sino-American	2	"	4
French	1	Sino-French	3	"	4
Japanese	29	Sino-Japanese	14	"	43
Russian	1	Sino-Russian	1	"	2
Italian	1			"	1
German	1			"	1
Dutch	2			"	2
Belgian	2			"	2
		Sino-Scandinavian	1	"	1
Total	43		21		64

49. 銀行年鑑 and other sources.

### **Special Privileges of Foreign Banks.**

The foreign banks used to have a monopoly of the foreign exchange business, when importing and exporting were also carried on exclusively by foreigners. In the last few years, modern educated Chinese, many of whom are returned students from America, went into the latter business, and modern Chinese banks began to handle foreign exchange. However, this did not take place until 1918. In the preceding year, the writer had some discussion of this matter with a leading Chinese banker in Shanghai, who brushed aside his suggestion by saying that it would not be profitable for a Chinese bank to do foreign exchange business. Yet a year later the same banker changed his mind, and began to have correspondents in foreign countries. Tientsin was even slower in this matter, having gone into this line only two or three years ago. Towards the end of last year, there were six Chinese importing and exporting firms in that city, and two Chinese banks, and a Sino-American bank catering to their needs.<sup>50</sup>

In another line the foreign banks had a great advantage over Chinese and Sino-foreign institutions. Through treaty stipulations and loan contracts the customs and salt revenues of the Government must be deposited with the former, and only surpluses after the foreign indemnity and loan services have been met may be transferred to the latter banks. The maritime customs revenue, which now totals about \$100,000,000 a year, must be first deposited with the Hongkong and Shanghai Bank at Shanghai, although formerly it was equally divided among that bank and the Deutsch-Asiatic and the Russo-Asiatic Banks. The German bank lost the privileged position through the War, the

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50. Investigation of the Bureau, December, 1926.

Russian bank through voluntary liquidation, and the British bank therefore becomes the sole depository until distribution of the fund is made at the end of each month.<sup>51</sup>

Furthermore, the Hongkong Bank holds a large share of the native customs revenue on indemnity accounts, as well as the funds of many Government railways, such as the Shanghai-Nanking and Shanghai-Hangchow lines. Through control of these funds it exerts a great influence on the money market, and modern and native Chinese banks, as well as other foreign banks, often have to depend on it for accommodation. The Banque de l'Indo-Chine, the Yokohama Specie Bank and the International Banking Corporation have also certain privileges as depositories of indemnity and loan funds (the Russo-French Loan of 1895, the Reorganization Loan of 1913, etc.), but they could not compare with the Hongkong Bank. As Sino-foreign banks, except the defunct Russo-Asiatic Bank, do not enjoy such special privileges, and as they are generally members of the Chinese Bankers Association, they are better classified with Chinese than foreign banks.

Although the Banks of China and of Communications, with their numerous branches scattered all over the country, should have been the reserve banks, and although the former does divide the country into reserve districts with first grade branches located at the respective reserve centers, such as Shanghai, Hankow, etc., they have not actually been such partly because a large proportion of the Government revenue is held by foreign and provincial banks, and partly because these two Government banks do not abstain entirely from open market operations. In fact, the former Shansi banks were more truly reserve banks,

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51. Wright, the Collection and Disposal of the Customs Revenue, second edition.

as they held among them practically all the nation's reserve fund,—although it was not so large as it is now.

#### Co-operative Credit.

Without borrowing the idea from foreign sources, China has long had co-operative credit organizations. It is claimed that the first one of its kind was originated by Pang Te-kung<sup>52</sup> of the Three Kingdoms<sup>53</sup> (220-264), but no authoritative record has been found to support the statement. A group of farmers, small tradesmen, or any kind of people, probably twenty or thirty, may come together and organise a society. Each pledges to pay a share or half a share, which may be as small a sum as 100 coppers, once a month or two months. One of the group, usually the promoter of the society, serves as the chairman, and the monthly or bi-monthly meetings are held at his house. A dinner is served to those who attend the meeting, at the expense of the chairman, who in turn is entitled to the privilege of making use of the fund collected at the first meeting. Thereafter the fund at any meeting goes to the highest bidder, that is, the man offering the highest interest rate, or to the lucky man who has the largest number of points at a throw of six dice.

Such societies are known by different names. One adopting the bidding method is known as *piao-hui*,<sup>54</sup> the dice-throw method, *yao-hui*.<sup>55</sup> In either case one who has received the fund in any month is not entitled to any further sum, but one entitled to the fund by dice throw may transfer it to another member of the society by mutual arrangement, if the lucky man does not need the money at that time. Interest may or may not be paid in a *yao-hui*

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52. 龐德公

53. 三國

54. 標會

55. 搖會



society. The chairman of the society is usually exempted from interest payment, because he bears the expenses of the meetings and has to make up whatever share defaulted in any month, by any of the members.<sup>56</sup>

During the last few years modern co-operative credit societies were organised by the farmers of Chihli, Kiangsu and Anhwei under the supervision of the China International Famine Relief Commission. The Commission has a special fund put aside from the Famine Relief Surtax to be loaned out to those societies which are organised according to its plans, have received its recognition, and are subject to its supervision in their workings. Till now there are already 471 societies organised of which 112 have been recognised by the Commission.<sup>57</sup>

The fifth class of financial institutions include the pawn shops, the loan associations (such as those of Hupeh) and many mercantile establishments which incidentally carry on a banking business. The presence of these quasi-financial agencies is a sign of the defectiveness of our financial organization. There is no proper agency for giving credit to small farmers and small tradesmen, and there is no procedure by which the future income, rather than the present possessions, may be taken as a guaranty for a loan. Accordingly, the poorer people have to finance their business by hypothecating their personal effects or their instruments of production when not needed. In this way they obtain credit from the pawn shops, which credit is very much limited as to both time and amount. The time limit is usually one year to two years, and the amount seldom exceeds 60% of the selling value of the object pawned.

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56. Investigation of the Bureau in Kiangsu.

57. Records of the Commission up to July 8, 1927.

Considering the small number of personal effects and instruments of production and their still smaller selling value, and considering the high rate of interest, this method of getting credit is certainly a ruinous method. Still, it would do more harm than good to suppress the pawn shop business. It is an essential institution to the poorer class, without which they could hardly live, not to say carry on any production. Jernigan, who is well acquainted with Chinese business life, has very justly said: "It would be almost impossible for many worthy Chinese to support their families and cultivate their little farms without the assistance of the pawn shops."<sup>58</sup> The government has in this case wisely recognized the special function of the pawn shops, and has required them to obtain licenses from it before starting business, and the license has to be renewed every year. It has also set limits to the rate of interest that they may charge, and the length of time allowed the customers for paying back the loan. The latest draft of pawnshop regulations provides for a maximum interest rate of 3% a month, and the forfeiture of the pawned object not earlier than one year after payment of interest stops.<sup>59</sup>

#### Pawnshops.

The pawnshop system was first worked out in Anhwei province, which accounts for the fact that there are more Anhwei men in the business than those of any other province. There are three classes of pawnshops in general: (1) *tang*<sup>60</sup> or *tien*,<sup>61</sup> shops of larger capital allowing longer terms of credit and charging lower rates of interest, but accepting articles with greater scruples; (2) *chih*<sup>62</sup> or *ya*,<sup>63</sup>

58. Jernigan, *China in Law and Commerce*.

59. 中華法令大全

60. 當 61. 典 62. 質 63. 押

smaller shops taking greater risks and charging higher rates; (3) *tai tang*,<sup>64</sup> very small shops acting as agencies of the former classes, and charging a commission to the customers in addition to the interest of the pawnshops. The last are usually found in small villages which have no regular pawnshops.

Interest charged by the first class of shops is usually two per cent per month, and by the second ten or more per cent for the whole period of a few months, pre-paid at the time of making the loan. When the period elapses, the things used as security are forfeited, and the smaller shops make more money in selling the securities than even from the high interest rate itself.<sup>65</sup> As thieves find it convenient to dispose of their spoils through pawnshops, the Government forbids these shops to charge interest to the original owners when they come to redeem their lost property, but this is allowed in Chekiang on the strength of age-honored tradition, which also received official sanction in the middle part of the Manchu dynasty. The business of some large *tang* or *tien* in Chekiang amounts to \$200,000 a year. There are also special guilds of pawnshops.<sup>66</sup>

Loan associations are usually organised by well to do people in the neighborhood of the association. They are called "*tui chin hui*"<sup>67</sup> in Hupeh, or association of gold piles, just an expression of prospective prosperity. The capital varies from one to ten million cash (about \$350 to \$3,500), composed of shares of 100,000 cash each. Share certificates are printed, and each shareholder pays in addition to his share of capital, 5,000 cash for general

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64. 代當

65. Investigation of the Bureau in April, 1924.

66. Investigation of the Bureau in June, 1926.

67. 堆金會

expenses in connection with the organization, etc. The officers consist of a manager, a vice-manager, a treasurer and an accountant, who all serve for three years. Special men are hired by the manager to collect loans when due. Their salaries are paid by the company, but the manager bears full responsibility for any irregularity they may commit in connection with the association business.

If a shareholder wishes to withdraw his capital, he will receive no interest on it if the withdrawal takes place within one year, but will receive 30 per cent. per annum after that. No shareholder may guarantee any outsider who wishes to make loans from the association, but he may borrow himself to the extent of the capital he has invested. Every month a shareholders' meeting is held, and every year an annual meeting, at which all accounts must be closed and submitted to examination. After three years, if the association has operated successfully, and the shareholders wish to extend it for another three years, the original capital, as well as the earnings of the past, excepting only the portion to be used as bonus for the officers, must be kept intact.

Outsiders who wish to borrow from the association must first secure a reliable firm or local gentry as guarantor, who must be acceptable to the manager of the association, before he may make out a loan contract, and obtain the necessary funds. At the time of handing over the loan, the association deducts two per cent. to cover expenses involved. The term of the loan is between 4 months and a year, during which the sum is to be amortised daily. At the rate of 20 per cent, which is the usual rate with such associations, a loan of 100,000 cash amortised in 200 days would require a daily payment of 600 cash. Below is a sample of the loan contract :

### Loan Contract.

The maker of this document.....borrows from (name of association).....the sum of .....thousand cash, in double-coppers. The rate of interest is fixed in the presence of the three parties concerned to be 20 per cent, the term .....months, and the daily repayment..... cash. If there be any default in carrying out the contract, the guarantor will be responsible for it. Lest words of mouth may not be relied upon, this loan document is hereby made.

*Seal of guarantor*

Date.....

As is the Chinese usage, such documents are not in the form of contracts, which are signed by both parties. On the contrary, the borrower is the maker, and the guarantor, who alone is required to attach his signature and seal to it, becomes more prominent in the transaction than the creditor and debtor themselves. The rate of interest is called 20 per cent, but in view of the actual length of the period, and the system of daily amortisation, it is much higher. Nevertheless, these associations supply a need of the middle and lower classes in making temporary advances to them. On account of their larger capital and their method of organization, they have some advantage over individual money-lenders.<sup>68</sup>

### Special Institutions.

The last or sixth class consists of such special institutions as the mints, the specie-smelters, the specie-testing bureaus, the bankers' guilds and associations, and the stock and gold exchanges.

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68. Investigation of the Bureau, in 1926.

The first mint for coining silver dollars was established in Canton in 1890 by the famous Viceroy Chang Chih-tung,<sup>69</sup> and the first one for coining copper cents was established in the same city in 1901. Mints for brass cash dated back as early as eleven centuries before Christ, when Tai-kung-wang<sup>70</sup> first adopted a monetary system, but since the minting of copper cents, these have been closed down or converted into mints of the latter kind. The copper mint of Changsha, for instance, melts down brass cash for use in coining copper cents. The Tientsin mint was the first to coin the Yuan Shi-kai dollar under the National Currency Regulations of 1914, as well as the subsidiary silver bearing the same effigy and intended to be "big money" dimes. Last year, however, when Chang Tsung-chang controlled Chihli, the mint was partly converted into an arsenal.

The specie-smelters, known as *lu-fang*,<sup>71</sup> were private firms which supplied the commercial world with silver *sycee*, or silver bullion in shoes. The word *sycee* is the Cantonese pronunciation of *si-ssu*<sup>72</sup>,—"fine thread"—meaning high grade silver. A foreign authority on Chinese currency, being at a loss to explain the word, quoted an English verse saying that it is called *sycee* because "men *sigh* to *see* it go." In the Yuan dynasty<sup>73</sup>, when *sycee* was first put into circulation,—brass cash having been the common medium of exchange before that—it was cast by the Government, and had a fixed weight and fineness,<sup>74</sup> but later private smelters took the matter into their own hands, and began to cast *sycee* according to the varying commercial standards of the locality rather than the Government standard. This is another instance of Chinese merchants freeing themselves

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69. 張之洞 70. 太公望, 見通考錢幣考 71. 爐房 72. 細絲  
73. 元 (1277-1367 A.D.) 74. 續通考

from Government control. At present, the smelting business has dwindled to insignificance, because actual *sycee* has gradually gone out of use, although silver taels still serve as money of account at many places.

In this connection the specie-testing bureaux<sup>75</sup> may be mentioned. They are established by the bankers' guilds for the sake of maintaining the silver standard of the locality, and often, of the surrounding districts. This is because each city has a different standard of weight for weighing silver, known as *ping*,<sup>76</sup> and a different standard of fineness, known as *se*.<sup>77</sup> An ordinary merchant, on receiving a shoe of silver, will not be able to tell if it really contains so much silver of a stated fineness, as it purports to be. He cannot analyse the alloy, nor can he determine the weight with his own scales, as the other party may dispute the accuracy of his instrument. Nor has the Government any scales representing the local *ping*, and it formerly maintained no assay office which offered free services to the people. Under such circumstances, the existence of specie-testing bureaux is a great convenience.

A specie-testing bureau is organised as a private firm, but must obtain recognition from the local government and all the bankers before it could do business. It must also deposit a large sum of money with the bankers' guild, for, if it should certify wrongly to any party, it is responsible for making good the loss. The deposit also serves as a guaranty against fraudulent certification. On the other hand, if any bank should alter the bureau's certification after it is put on the shoe, or change the weight or fineness of the silver, it is also liable to heavy fines by the bankers' guild, and will be forever boycotted by all banks of the city.

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75. 公估局 76. 平 77. 色

The bureau has accurate scales representing the local standard *ping*, and keeps experts who can judge the fineness of silver by looking at its lustre and granular construction, listening to its ringing sound, pounding it with a hammer, etc. After the weight and fineness are ascertained, certification is done by writing on the slightly depraved surface at the bottom of the *sycee* shoe. For the service the bureau receives a commission of about one half of one per cent of the value of silver certified.<sup>78</sup> These bureaux have fallen into disuse in many localities.

#### Bankers' Guilds and Stock Exchanges.

Bankers' guilds are the organizations of native banks, while modern banks form bankers' associations, of which there are already quite a number, located in the larger cities. The former still fix the rate of interest, the exchange rates between various cities, the exchange rates between silver taels, dollars, coppers, paper money, etc. The latter usually deals with the Government concerning new issues of bonds, consolidation of old issues, redemption of depreciated money, and with foreign banks in case of bankruptcy (as the Banque Industrielle de Chine), voluntary liquidation (as the Russo-Asiatic Bank), or other special matters (as the recent case of the Hongkong and Shanghai Bank at Peking refusing to allow withdrawal of certain deposits because of certain irregularities of its own employees).

There are two bankers' guilds in Shanghai, one for the bigger native banks known as *ta-tung-hang*<sup>79</sup> and one for the smaller ones known as *siao-tung-hang*.<sup>80</sup> In Tientsin the *Chien-shang-kung-hui*<sup>81</sup> maintains an exchange which

78. 錢公權各省金融概略二二四頁

79. 大同行 80. 小同行 81. 錢商公會



does business from 10 to 12 and 1.30 to 4. The principal things dealt with on the exchange are silver dollars and Japanese gold yen notes, while formerly roubles were very much bought and sold. The pound sterling, the American dollars, and stocks and shares are also transacted there. Its members, of which there are over 70, are all large native banks, smaller institutions having no seats on the exchange at all. Brokers are also present, their commission being 20 cents per \$1,000. A specie-testing bureau is still housed in the guild, but its service is only required when some outport merchant or bank happens to ship *sycee* to Tientsin. Of the smelting firms, only one remains in the business.<sup>82</sup>

During recent years stock and produce exchanges have sprung up in all the larger cities. They are organised along modern lines, requiring margins and having fixed settlement days for futures. The stock exchanges now deal mostly in Central Government bonds of the Consolidated Service on margins, although cash transactions in the 96 Million bonds are also allowed. However, the so-called cash transactions are different in different cities. The Shanghai Stock and Produce Exchange, for instance, actually requires full payment for the bonds, but in Peking, where there would be few transactions on the Exchange if the 96 Million Bonds were excluded, the brokers are allowed to buy and sell for their principals on a margin of \$1,000 per \$10,000 face value of the bonds. As foreign exchange involves gold values, Shanghai has also a Gold Exchange where people speculate in gold bullion.<sup>83</sup>

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82. For Shanghai guilds, see 張公權各省金融概略; for Tientsin guild see 中外經濟周刊一九七號, report of Bureau's investigation in November, 1926.

83. Personal investigation.

A few years ago there was a mushroom growth of stock and produce exchanges and trust companies, when it became almost a matter of fashion to organise these institutions. Tens of them sprang up over night, but soon it was found unprofitable to maintain too many of them at the same time, and a large proportion was closed down. At present only a few trust companies and exchanges remain which really serve some purpose, and these co-operate in handling securities. Unfortunately, however, there are no good industrial bonds in the market and few active industrial shares, and most of the investment as well as speculation business is in Government securities.<sup>84</sup>

#### Banking Practice.

We now come to the second part of our discussion, namely, banking practice in China. We shall take up one by one such topics as the taking of deposits, the making of loans, the conducting of exchange, the use of credit instruments, collections and clearings, and the making of rates.

Deposits were of two kinds, fixed and current. We had no such thing as savings deposits under the old system, but it has been introduced by the modern banks. Some of the modern banks have also deposits in the nature of trust funds, held for the benefit of young people preparing for school, or for marriage, or of adults saving for old age. The first bank in my knowledge that introduced such special forms of deposits was the *Hsin Cheng Bank*,<sup>85</sup> which has unfortunately closed up. So far as the ordinary fixed and current deposits are concerned, the modern banks follow Western methods, and distinguish between deposits for one year, half a year, three months, etc. The rate of interest on these deposits is usually higher in modern Chinese banks

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84. Personal Investigation.

85. 信成銀行 (北京)

than in foreign banks, and higher in old native banks than in modern banks.

The old native banks often have no fixed rates for deposits, but decide on a special rate for every special case. This of course is true even in foreign banks when the amount of the deposit is large, but with Chinese banks it is again the personal element that makes the difference. Old customers oftentimes get better rates even when they deposit small sums. There is also a distinction of deposits between dollar accounts and tael accounts. As silver by weight is still the prevailing money of account in wholesale business in China, and as the value of bar silver determines our foreign exchange, the tael account is usually preferred by bankers, and a higher rate is allowed on such deposits.

Under the old system, a depositor is given a pass book in the form of a folder. All transactions are entered in it, and all deposits and withdrawals must be made by the depositor himself with the pass book, or by some authorized agent who has been previously introduced by the depositor personally to one of the bank managers. The authorization is not formally done by power of attorney, as is the case with foreign banks, but only by words of mouth.

At present the modern banks have adopted foreign methods in handling the deposits. Certificates are issued for fixed deposits, while for current deposits, the customer may receive a pass book only, or a pass book with a pay-in book and a cheque book. The pay-in book is used in making additional deposits, while the cheque book is for making withdrawals. Besides these, the Bank of China has also a letter of credit system, consisting of a pass book which enables the depositor to draw money from any of its branches, provided sufficient time has elapsed for the bank to notify its branches. In drawing on deposits under this

system, the depositor must have a guarantor to identify him in the city where money is to be drawn.

The making of loans is the second topic under this heading. This is an ancient practice in China, but the basis of the loan is somehow different from that in the West. In the West, discounts form the main part of loans from banks, by which we mean the prepayment by banks to holders of commercial bills before the bill has matured, at a discount equal the rate of interest to be charged on the amount represented by the bill. The bill is turned over to the bank, and serves as a security for the loan. As the transfer of the bill is usually permanent and as the payment is collected by the bank from the maker of the bill directly, the transaction is very much like a sale of the bill in question, and it is often so considered by business men. Nevertheless, the money advanced by the bank in the first instance is essentially of the nature of a loan, because it is given for a future equivalent, and interest is received on the amount for the number of days till the payment is made.

#### **Securities for Loans.**

Now in China this kind of loans are not so common, because bills are not so many. Where bills are discounted, the process shows more clearly the nature of loan-making. For, according to old Chinese practice, every endorser is responsible to the next one below in the list, and when it is discounted at a bank, the party who presents the bill is responsible for ultimate payment to the bank, and thus the loan is actually repaid by the party to whom it is made. The bill serves only as a security, and nothing else. This endorser will then present the bill for payment to the man from whom he obtained it, and that man in turn has recourse

to the endorser next above him, until the maker is reached.

This clumsy way of presenting a bill for payment is again due to the personal element in Chinese credit transactions; only the endorser next above is personally known to the holder, not the maker, and hence the bill cannot be presented directly to the maker. The endorsement is done by writing on a separate sheet of paper attached to the bill, something like a rider in a parliamentary bill, which explains why the bill is transferred from one party to the other, besides bearing the signatures and seals of the parties concerned. The process of discounting is called *tieh hsien*,<sup>86</sup> meaning making up something in cashing the bill.

A more common way of loan making is based on collateral security. The borrower makes out a promisory note and deposits with the native bank certain land deeds, bonds, stocks, warehouse receipts, etc. All kinds of things are used as security, even receipts issued by the government to holders of purchased titles were formerly utilized for such purposes.

Other papers such as letters acknowledging loans written by business men which may be used for reclaiming the money (really informal promisory notes), licenses to do business such as are required of pawnshops or tobacco shops (*ya-tieh*),<sup>87</sup> salt monopoly licenses which grant to the holder the privilege of selling salt in certain allotted districts (*yin-piau*),<sup>88</sup> rent folders (*chu-chi*)<sup>89</sup> which entitle the holder to collect rent from certain houses,—in fact, anything that has any value to the debtor may be used as security, no matter whether it has any open market value at all. The purpose is not for the bank to recoup itself by selling the security in default of payment, but to bind the debtor to his

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86. 貼現  
88. 引票

87. 牙帖  
89. 租摺

promise so that there will be no default. Bonds and stocks are only used as security since the organization of modern corporations, and modern banks prefer such collaterals to those above mentioned on account of their marketability.

#### **Merchandise as Security.**

Owing to the lack of bills of exchange, Chinese banks often make loans on the security of the merchandise itself for the transfer of which the loan is made. In fact, this used to be the most common kind of loan-making. The buyer borrows the money from the bank and turns over the goods to it as security to be drawn out gradually as he pays the loan by instalments. The banks for this purpose sometimes keep warehouses of their own, and sometimes they make use of regular go-downs. Seven modern Chinese banks of Shanghai—the Bank of China, the Bank of Communications, the Shanghai Commercial & Savings Bank, the Chekiang Industrial Bank, the Chekiang Bank, the Salt Industrial Bank, and the Chungfoo Union Bank—for example, have jointly established banker's warehouses.

When banks have no special warehouses of their own, then the receipts of other warehouses are accepted instead. Such receipts however are not themselves security, because they are not negotiable as were the warehouse receipts for cotton in the United States during the opening of the European War. It is the goods represented by these receipts that serve as security against default of payment. The banks have the right to sell or otherwise dispose of the goods to recoup itself of the loss due to non-payment. Sometimes the goods are not the object of the transaction, and their value cannot be ascertained, and the banks have to take the risk of overestimating it. Also, cheating is sometimes practiced by representing low grade

goods with high grade samples, and the bank, if it has no expert judge of merchandise, is not infrequently deceived, and may grant loans to an amount entirely unjustified by the value of the goods hypothecated.

Of greater danger and even more illegitimate than this is the practice of certain native bankers of buying and selling goods on their own account and of engaging in speculation. Owing to the limited use of commercial paper, and the practically total absence of an industrial investment market, banks are hard pressed in finding field for investing their money. Ordinary loans are sometimes not sufficient, and good Government bonds are held up by investors and banks that are ahead in the business. As they are more or less investing in merchandise when they take it as security for loans, it does not take them long to overstep the limits of banking business and do actual trading.

Generally this practice is worse than trading, because when the banks buy and sell goods, they do not wait long enough to reap the profits of ordinary trading business. They simply speculate for a rise or fall of the price of the goods handled, thereby gaining a speculative profit. Silk, grain, cotton yarn, and all kinds of staple commodities are made the object of speculation, but particularly gold, real estate, foreign exchange and speculative Government bonds like the 96 Million series, find favor with many unscrupulous banks. The rubber stocks were once a fashionable kind of investment, and it was this thing which caused the bankruptcy of Cheng Yuan<sup>90</sup> and 12 other banks at Shanghai (and their branches at other places) in 1911. That was the beginning of the end of Shansi banks.

When a loan is not secured by anything, neither a bill

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90. 正元錢莊.

nor a collateral security, nor even goods, it is made on guaranty. Some third party guarantees the payment for the borrower. The Shansi banks, for instance, often loan to businessmen on the guaranty of native banks.

#### Chop Loans.

As the native banks often deposit their surplus funds, formerly with the Shansi banks and later with the foreign banks, they also have occasion often to borrow money from these banks. The Shansi banks sometimes loan directly to the native banks, without regard to the purpose of the loan, and sometimes they loan to the customers of the native banks with the latter as intermediary. The customers have to offer security just as ordinary loans would require, but the intermediary bank is subject to call of the loan at any time.

When the foreign banks loan to the native banks, there is a special arrangement by which each native bank is entitled to a certain amount of unsecured loan, according to the standing and credit of the bank. The payment however is guaranteed by the bankers' guild. Such loans are subject to call by the foreign banks at any time, and are called *chop loans*.<sup>90a</sup> As a matter of fact, however, a foreign bank seldom calls in a chop loan without sufficient notice.

So much for loans. The next topic under banking practice is the making of exchanges. The transmission of money was the first function of a bank, both in the Occident and China. In the Tang dynasty, about eleven centuries ago, merchants invented the bill of exchange known as *fei-chien*.<sup>91</sup> Rich men who had taxes or other payments

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90a 拆款。

91. 飛錢。



to make in distant places deposited their money with these merchants, and received instead half of a tally entitling the holder to the amount to the distant city if it agreed with the other half forwarded by the merchants to their agent at that place.<sup>92</sup>

At present, the bill of exchange is essentially of the same nature as the old tally, except that, instead of two, it usually has three parts, with one on file in the issuing bank. The thing that is of special interest to us is the fixing of the rate of exchange. In foreign countries, the rate of domestic exchange has very little fluctuation, there being only a slight premium or slight discount corresponding to a greater or smaller demand for bills on that city. In China, it is quite different. All domestic exchange is actually foreign exchange. The money of account of one city is different from the money of account of another, and a par of exchange must be fixed in the same way that a par of exchange is fixed between England and America.

Let us take for instance an exchange transaction between Peking and Shanghai. Now, the Peking currency is the Peking *Kungfa*, and that of Shanghai, the 98<sup>0</sup>/<sub>10</sub> *Kuei-yuan*. The *ping* (or weight) as well as the *se* (or fineness) of the two kinds of currency is different. By reducing to a common basis, we find that 1000 taels of *Kungfa* is equivalent to 1057.88 taels in *Kuei-yuan* or 1000 taels in *Kuei-yuan* is equivalent to 946.04 taels in *Kungfa*. This is the par of exchange between the two cities. Adding to or subtracting from this the cost of transporting silver, which is composed of the following items :

Steamer freight charge from Shanghai to Tientsin	... Tls.2.500
Railway freight charge	... .. 1.750
Wharfage dues	... .. .330
Insurance fee	... .. .700

92. 文獻通考錢幣考.

A wooden box ... ..	.175
Transportation in the city .. ..	.050
Interest lost on transit (at 5%; time of transit averages 6 days) ... ..	.850

Total ... .. Tls.6.355

and we get the shipping points. When bills for 1,000 Kungfa taels cost more than 1064.235 taels in *Kuei-yuan*, silver will be sent from Shanghai to Peking, and *vice versa* if they are worth less than 1051.525 taels.<sup>93</sup> The former corresponds to the gold export point (from point of view of Shanghai) in foreign exchange, and the latter to the gold import point. Hence the fixing of domestic exchange rates in China, unless the remittance is in silver dollars, is entirely like the fixing of foreign exchange rates between the gold using countries.

#### Chinese Credit Instruments.

Checks and bankers' bills are the common forms of credit instruments in China, although commercial bills drawn by sellers of goods on buyers are not wanting. For instance, at Kingtechen, Kiangsi, (the center of China's porcelain industry) there are four kinds of bills current in the money market. They are :

(1) Those drawn by a porcelain exporter (exporting chinaware to Shanghai, Hankow, etc.) on a local native bank in which the drawer has deposited transfer orders (or bankers' bills) from other cities. These are in the nature of ordinary checks, and they can be passed freely as specie.

(2) Those in the nature of overdrafts drawn by local exporters or outport buying agents visiting the town, whose credit is good enough to command the trust of a local bank. To them the local native bank issues a check book, usually

93. 張公權各省金融概略。The shipping charges are now different.

in triplicate form, but the amount to be drawn on any one check is limited to a certain sum, so as to ensure that the total amount overdrawn would not exceed the sum agreed upon.

(3) The third kind of bills are in the nature of commercial bills, because they are drawn by the exporters on the outport firms to whom the goods are shipped. If drawn on Shanghai, such bills are much sought after by local importers in settling their accounts in that city.

(4) Bills issued by local native banks that are not members of the bankers' guild, because they do not give check books to customers, but issue their own checks on their behalf. These are really promissory notes of banks, and they circulate freely as cash.<sup>94</sup>

In modern banks in large cities, depositors can always open checking accounts, but their checks do not pass through many hands before they are presented for payment to the drawee bank, because personal credit is important in China, and few individuals in large cities can command such trust of others as the porcelain exporters do in the small town of Kingtechen. Legal protection to holders of credit instruments does not appeal very much to Chinese businessmen.

Direct exchange does not exist between all cities. There are many places to which money can be only remitted by postal money orders, and many more which cannot be reached at all. Then it is necessary to remit the money to the nearest possible town, and thence forwarded by shipping specie. An old method was to put silver shoes in large branches of trees about three feet long, with the core scooped out as a receptacle. These branches

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94. Investigation of the Bureau at Kingtechen in 1926.

with the shoes in them were known as *shao*<sup>95</sup>, and they were sent from one place to another under the protection of soldiers or paid guards known as *piao-ssu*.<sup>96</sup>

Even between cities which have modern banking facilities, the transportation of silver by merchants on their own account is not uncommon. Between Shanghai and Wusih, for instance, large sums are carried on boats, because the traders from Shanghai buy silk cocoons in such large quantities from Wusih and the vicinity that bills to such amount cannot be drawn on the Wusih banks without causing them much embarrassment. As the distance between the two cities is not great, and as the route is not very dangerous, the traders prefer to carry silver with them on boats which can be used for conveying the cocoons on their way back. Every spring we read of petitions of those traders to the authorities asking for protection on their way to that city.

#### Remittance by Drafts.

The Bank of China and Bank of Communications, having a large number of branches, can generally remit directly to any city where there is a branch or agency, but beyond that they remit indirectly through the native banks. The latter have only branches or correspondents in a few cities, and remittance to all other places must be done indirectly. For instance, exchange between Peking and any city in Szechuen can be only effected by buying a draft here on Chungking where it will be exchanged for a draft on the other city. Exchange between Shanghai and certain cities in Kiangsu province north of the Yangtze River usually go through Yangchow or Chinkiang. Thus Yangchow, Chinkiang, Chungking, and such

95. 箱

96. 镖师

like cities are the centers of exchange operations, and if we consider also the amount of reserves kept in these cities, the volume of trade, the system of money movements, we may properly regard them as second class financial centers. They are the places where banks doing other than a strict local business usually have branches or correspondents.

The system of out-town collection is not different from the system of exchanges. Bills and drafts are collected through correspondents and cleared through them if there are counter-claims. It is the local clearing and local collection that are of interest. The rule governing collection between native banks requires a day's notice. If the bank presenting the bill is in urgent need of funds, and insists upon receiving money right away, a discount is to be allowed to the paying bank. This is known as *huei-tow*.<sup>97</sup> The foreign banks settle their accounts on the day of transaction, and that is known as *hua-tow*.<sup>98</sup> Modern Chinese banks either follow the one or the other system. The Shanghai branch of the Bank of China *e.g.* has adopted the *hua-tow* system, and that of the Bank of Communications, *huei-tow*.

In conducting clearings, the bankers' guild is often utilized. The clearing is not limited to bills and checks, but dollar and cent notes are also cleared. In fact, the bulk of the clearings sometimes consists of such notes. Before the issue of copper notes by the *Ping Shih Bureau*<sup>99</sup> of the Ministry of Finance, all Peking cash bankers issued their own notes. These, when they got into the hands of other than the issuing bank, were bundled up and packed into a wheelbarrow, and were thus conveyed to the bankers' guild every morning where they were cleared. We could see

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97. 匯頭

98. 劃頭

99. 平市官錢局

scores of such wheelbarrows every morning at the door of the guild. It is to a great extent due to this system, which is very much like the practice of Canadian banks, that over-issue of notes has been very rare with native Chinese banks. Depreciated notes have always been issued by government institutions.

#### Fixing Rates.

The bankers' guild, besides serving as a clearing house to the banks, also, as we have already pointed out, has the authority of fixing all kinds of rates. In a country where there is no uniform system of currency, it would be entirely inconceivable that things could go on smoothly if not for these guilds. One example is the fixing of interest rates. The Soochow native banks meet everyday at their guild, and those needing money will bid so much per diem for 1,000 taels, and those having money to lend will name their rates too. Gradually the bids go higher and the offers lower until they agree on a rate, and one transaction is completed. Then there will be further offers and further bids, just the same as on a stock exchange, until all borrowers and lenders are satisfied, unless some prefer to leave the guild without borrowing or lending.

The average of all quotations of the month is the official rate for the month, called *yi-pan*,<sup>99a</sup> but to other than members of the guild a higher rate is charged for loans and a lower rate offered for deposits<sup>100</sup>. The daily rates are quoted at so many mace and candareens (tenth and hundredth parts of a tael). If three mace, it would mean approximately nine taels a month, or 108 taels a year, which would be equivalent to 10.8 per cent per annum. Actual number of days in the month, and actual number of

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99a. 匯盤

100. Investigation by Dr. Y. C. Ma.

months in the year, according to the lunar calendar, serve as the basis for such calculations. The official rate for the members of the guild is sometimes called *nei-pan*,<sup>101</sup> and that fixed by the guild for outsiders, on the basis of the former, *wai-pan*.<sup>102</sup>

The fixing of the exchange rate between coppers (and copper notes) and the silver dollar by the Peking Bankers' Guild is a more complicated affair. The rate is reported every day in the newspapers in the following manner :

The official rate of copper coins yesterday was 2 candareens, discount 9.8 taels (2,132,250 cash a *p'ao* or 29,610 cash a dollar). The official rate of copper notes was 2.5 candareens, discount 5.4 taels (1,881,440 cash a *p'ao* or 26,140 cash a dollar).

To the uninitiated it will seem strange that a discount of 5 to 9 taels is associated with a rate of only 2 or more candareens, and the connection between the official rates and the actual exchange figures for the dollar will not, therefore, be easily perceived. The mystery lies in the unit *p'ao*,<sup>103</sup> and its relation to the other units. Ordinary people never have anything to do with *p'ao*, yet it is the most important unit in the determination of the copper exchange rate. The explanation is very devious, but in outline it is as follows :

#### What Pao Means.

*P'ao* (泡) represents a silver *sycee* shoe of 53 taels on the *chi-li-chin-ping* scale. *Chi-li-chin-ping*<sup>104</sup> means a Peking market scale (*chin-ping*) which is 7 per cent (*chi-li*) lower than the Peking *kung-fa-ping*, or standard commercial scale. Hence, a *sycee* shoe of 53 taels *chi-li-chin-ping* should bear a discount of 0.371 taels. However, the 3 odd taels of the shoe are not subject to discount, only the round

101. 內盤

102. 外盤

103. 泡

104. 七厘京平

number is, in this case 50 taels, and the actual discount is therefore only 0.35 taels. 53 taels *chi-li-chin-ping* are therefore equivalent to 52.65 taels Peking *kung-fa-ping*, which is the standard commercial scale of Peking silver because all business transactions were formerly in terms of that scale. *P'ao*, in the first place, means a silver shoe of 52.65 taels Peking *kung-fa-ping*.

Rate. The rate 2 or  $2\frac{1}{2}$  candareens designates the quantity of silver that may be exchanged for a *tiao*<sup>95</sup> (10 coppers). Because the copper notes were rare on the day of the quotation, they commanded a premium over the copper coins, and their rate was one-half of a candareen higher.

Discount. The discount is the amount of silver that the buyer of coppers or copper notes offers to the seller for each *p'ao*, in addition to the quantity to be paid according to the rate. It is called "discount," because it means that a *p'ao* of silver will be exchanged for fewer coppers on account of it. It is variable in that it is fixed from day to day, while the official rate usually remains the same for many days or weeks.

Relation between *p'ao* and dollar. The dollar rate fluctuates from day to day; a dollar may exchange for 0.71 taels on one day, and 0.706 on another. But for the determination of the copper exchange, a *p'ao* of 52.65 taels is always considered equivalent to \$72, which means approximately 0.73 taels for a dollar. In fact, as actual silver shoes are now no more used, and copper coins and copper notes are exchanged for silver dollars, a *p'ao* really means \$72, but the silver tael equivalent is necessary in the calculations of the copper rates.

The explanation of the rates mentioned above may now be given. The *p'ao* of 52.65 taels Peking *kung-fa-ping*



first undergoes a discount of 9.8 taels (in the case of copper coin exchange), and its value becomes 42.85 taels. Each *tiao* of 100 copper coins is to be exchanged for 2 candareens or 0.02 taels. Dividing 42.85 taels by 0.02 taels, we get 2,142 $\frac{1}{2}$  *tiao* or 2,142,500 cash, a *tiao* being nominally 1,000 cash. But from this amount deductions must be made on account of *shih-chien*<sup>106</sup> and *yung-chien*<sup>107</sup>. The former is also known as *chien-chuan-chien*<sup>108</sup>, because formerly brass cash was strung together with strings, and a small deduction of so much per mille was usually made in the amount of cash in the *tiao* to pay for the cost of the string. The latter means commission, which is usually specified for each *p'ao*. The net exchange of a *p'ao* on that day was therefore only 2,132,520 cash. Divided by 72, the copper exchange rate of a dollar was 29,610 cash, or a little over 296 coppers.

Similarly with the copper notes. A discount was first made on the silver value of the *p'ao*, reducing it to 47.25 taels (52.65—5.4 taels). This was divided by 2.5 candareens or 0.025 taels, and the result was 1,890 *tiao* or 1,890,000 cash, a *p'ao*. After further deductions of *chien-chuan-chien* and commission, the net exchange rate became 1,881,440 cash. Divided by 72, the dollar exchange rate was 26,140 cash. The last division is not very accurate, because as coppers are now the smallest unit, and each copper is supposed to represent 100 cash, odd figures below 100 cash are often converted into round numbers.

The official rates are fixed at the Cash Market (*chien-shih*)<sup>109</sup> outside Chienmen every morning. To help in their calculations, those in the business have printed calculation tables showing the number of *tiao* for each *p'ao*

106. 市錢

107. 僞錢

108. 錢串錢

109. 錢市 //

at various rates. The first edition of the tables now in use was printed in 1883, and the wooden engraved plate from which they are now printed is kept by a certain merchant named Ma who lives at 1A Hou-ta-ken, Ta-tze-yin, south of Hsi-an-men-ta-chieh.<sup>110</sup>

#### Banks Without Capital.

Some special banking practices of Suiyuan and Ningpo may be related below, the banks in the former district controlling all business without any capital of their own, and at the latter city banks as well as commercial firms keeping accounts for everybody and every transaction. Explanations of these practices follow.

The business activities of the three important trading cities on the Mongolian border—Paotowchen,<sup>111</sup> Kweihua,<sup>112</sup> and Suiyuan<sup>113</sup>—are controlled by the native banks. No commercial enterprises can start business without first establishing relations with one of them. Yet they have not a cent of capital of their own, and have to rely on the business houses in the three cities to entrust their capital in their keeping. This is a practice which is almost as old as the cities themselves.

The banks pay no interest on such deposits. Moreover, all cash received by the firms in the regular course of their business, small though the amounts usually are, must be similarly deposited with the banks which keep their capital. The Bank of China established a branch at Paotowchen, after the Peking-Suiyuan railway was extended to that place, but it cannot do business with the commercial firms directly, having to work through these native banks. Its loans to the local business men are made

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110. 西安門大街南達子營後大坑一號馬姓。The account of *p'ao* is based on investigations made by T. S. Wei and C. Li.

111. 包頭 112. 歸化 113. 綏遠

through these banks; all payments between local firms are made through them; and many exchange operations between these cities and other provinces are done through these media.

Notwithstanding their unique position and multifarious activities, very little cash is used in their transactions. The system works in the following manner. A commercial firm, say, one dealing in furs, is started. All its capital is deposited with native bank A., which credits the firm with this amount without, however, giving the depositor a receipt. The fur dealer buys tea bricks from a tea firm, and if the seller does business with the same bank, all that is necessary is for the bank to credit the tea firm with the amount representing the payment, and debit the buyer with a slightly larger amount to include a commission for the transfer. Neither party sees any cash in the transaction, nor any written document except the entries in the bank's books. If the tea firm has deposits in a different bank, B, then bank A will credit bank B with the payment, while at the same time bank B will enter in its books the amount to the credit of the tea firm, and debit bank A accordingly.

Now the fur dealer requires the tea bricks to barter for fur from the Mongols. He then sells his furs and collects payment precisely in the manner as in buying the tea bricks, by a process of bank transfers. In rare cases he may receive cash in payment, but the cash is immediately deposited with the bank, and the final result is still a book credit.

When the furs are sold in other cities, the bank also acts as collecting agent for the selling firm. If tea or other goods are bought in the interior, the bank can remit the payment through correspondent banks.

Even the Mongols now make use of the banks to some

extent, accepting their credits in lieu of tea or other goods, and when they do not have enough furs to barter for things the banks also debit them in their books, or collect payment at a later date. Hence, all transactions can be carried out with the help of this system, which is known locally as *po-tui-yin*<sup>114</sup> meaning "transfer money." The transfer itself is known as *ko-chang*.<sup>115</sup>

The Bankers' Guild there is called *Pao-feng-she*,<sup>116</sup> to which 19 of the large banks belong. There are many smaller banks which do business in a similar way, but they cannot make transfers with the members of the Guild as freely as the latter do among themselves. Most of them are also unable to carry on exchange operations with other cities.<sup>117</sup>

#### Where Credit Rules.

In Ningpo, a town of 300,000 inhabitants in Chekiang province, money is rarely employed in daily transactions, and is so scarce that it enjoys a premium when used in payment for goods. Credit is firmly established, and shops and firms clear accounts for their customers, and therefore are in reality banks as well. The practice also obtains between individuals.

Suppose A buys goods from shop B to the extent of, say, \$100, A simply notifies B that B can draw \$100 from shop C. This is usually done in the form of a written statement as evidence to C that shop B is entitled to the sum from A. When C is notified that A has transferred his sum of \$100 to shop B, shop C immediately takes the amount off A's credit and transfers it to B's credit. Further, if A's credit with C is only \$100, then A's credit with C is entirely cancelled upon the transference to shop B.

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114. 撥兌銀 115. 過帳

116. 寶豐社

117. Investigation of the Bureau in Suiyuan in December, 1925.

This practice is daily carried on in Ningpo without the least mistake or complication, although to visitors this method of credit transfer seems strange. Not only shops do this, but individuals of small financial standing also. The shops keep a special account for this kind of transaction, and individuals usually have a little notebook to record accounts received and paid by transfers. Any amount, no matter how small, can be transferred. Even when buying a pair of shoes, costing, say, \$1.50, the debt is generally passed on. The only drawback is that there is no way of finding out whether the payer has actually got credit with the third person. Hence, caution is observed, and the deal is not closed when the customer is present, but usually after several hours. But dishonesty is rare, as once a man loses his integrity, he could find no place in a town like Ningpo, which is founded on trust.

Every transfer is cleared on the day it is made, the shops and individuals striking a balance of their accounts as far as possible after the day's work is done. This practice is really the same in nature as the clearance of native bank orders, but the public in this case does its bank work.

Even a new visitor to Ningpo may have the privilege of transferring all his debts by making arrangements with the hotel accountant. If the hotel accountant allows his customer a credit of \$100, for instance, the customer can buy goods at various shops, procure food, etc., and charge the account to the hotel. The hotel accountant will transfer the debts of his customer to the hotel's account, possibly by asking the firms to receive payment from other concerns.

Of course, cash can also be paid if one wishes. But as Ningpo has very little cash money, when one pays cash one is entitled to a premium (or to have more goods),

according to daily quotations. If one buys goods worth \$1 and pays cash, one can either get goods actually worth \$1.10, or \$1 in goods plus a bonus of 10 silver cents. There is a daily quotation of the rate for cash payments. This is known as "sheng shui"<sup>118</sup> meaning "additional rate allowed", and varies considerably, chiefly according to the general trend of the cash money market in Ningpo. If it is very stringent, especially during disturbances or rumours of warfare when people wish to get cash money to go to other places, then the rate may rise as high as 10 per cent. The usual rate is about 1 1/2 per cent, and the present rate (November, 1925) is about 3 per cent.

#### Use for Banks.

It might be thought that Ningpo had little use for banks in their domestic affairs. On the contrary, the banks are harnessed to this unusual trust system, and perform functions which would not be attempted elsewhere. They, above all, act as debt collectors and book-keepers for their clients. If one has an account with a native bank and wishes to pay a bill to somebody, one would simply notify one's creditor that he could collect the money from the bank. This is much the same as drawing money from the bank by signing a check, but instead of cashing it, as is the usual case elsewhere, in Ningpo the bank usually transfers the amount from the payer's credit to that of the payee even if the latter has no account with it. Then the next time the payee wishes to buy something, he can likewise ask the seller to get the credit from the bank, and so on indefinitely. If the payee in question does not wish to leave the deposit in the bank, the bank may transfer the sum to another bank or firm, as desired by the payee. The payee can also

118. 申水

draw from a native bank in cash, subject, of course, to the discount current on the day of drawing. If he wishes to draw the sum of \$100 in cash, and the rate is 1 per cent, he would get only \$99 in actual silver.

At any time upon written notice from its client, a bank will collect his debts. The client can either have the money transferred to his account or draw cash at the current rate of premium. If cash is deposited in a native bank, the premium is added to the principal. Beside the interest they are entitled to from the bank, many persons profit by depositing when the rate is high and withdrawing when the rate is low. If one deposits \$1,000 cash in a native bank when the current rate is 3 per cent, one's actual deposit would be \$1,030. After a month, the rate for cash may be 1 per cent, in which case one would obtain \$1,019.70, excluding interest, by withdrawing.<sup>119</sup>

The above account of banking institutions and practice is an attempt at systematising information about China's financial organization collected personally and by the Bureau of Economic Information during many years, by direct investigation as well as research in Chinese books and records. Data from the books and records are unfortunately in the form of odds and ends, and take much time in putting them together. English books on this subject generally emphasize only such institutions and practices as have direct bearing on foreign bankers and businessmen, while some very useful books, like Edkin's *Banking and Prices in China*, unfortunately lack systematisation. We have also in this study tried to bring out certain general features about Chinese finance, namely, the lack of Government help or control, the undue emphasis on personal credit, and the absence of investment finance.

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119. Investigation of the Bureau in Ningpo, November, 1925.

**All these generalizations will, we hope, be substantiated by further investigations until we can reach a definite notion of the Chinese financial system.**



### III.

## Industrial and Financial Statistics of China.

Industrial statistics of China have been collected by the Ministry of Agriculture and Commerce for the whole country and by Provincial Governments and private organizations for special regions and industries. Financial statistics have been compiled by the Ministry of Finance, the Provincial Governments, and recently, the Financial Readjustment Commission. For special revenues and expenditures such as those of the Customs, Salt Gabelle, Government Railways and Post Office, accounts are published by the respective offices. Private individuals have also published financial tables on the basis of these official reports. The Government Bureau of Economic Information has compiled statistics along both lines, and published them in the Chinese Economic Bulletin and Chinese Economic Journal.

Among the more important official statistics of the first kind (industrial) is the Statistical Annual of the Ministry of Agriculture and Commerce, of which nine issues have been published, from 1912 to 1920, with 1921 figures appended to the last issue. Unfortunately many issues cover only a part of the country, because many provinces did not report to the Ministry in these years. Yet they are the only comprehensive records, comparatively speaking, as none other give more than one province or industry.

The first two issues of the Annual gave only manufacturing, mining and commercial statistics. Beginning with 1914, agriculture and forestry were added. The 1913 statistics covered all 22 provinces (including the three provinces of Manchuria) and the Metropolitan District. Sinkiang did not report in 1912, and Kweichow's report for 1914 is entirely unintelligible, and cannot be used. In that year, however, figures for the Special Administrative Districts of Jehol and Chahar were added, making the number, if complete, of territorial divisions in the Annual 25 instead of 23. Yunnan and Szechwan were left out in 1915, and the Second Revolution of 1916 was responsible for the absence of reports from four of the South-western provinces—Yunnan, Kweichow, Szechwan and Kwangtung. Kwangsi followed suit in 1917, but in that year Suiyuan figures were included in the Annual. Kwangtung later made up for 1916 and 1917, but have not reported since. The situation will be clear from Table A.

TABLE A.

Year	Number of Provinces and Districts reporting.	Provinces and Districts which did not report.
1912	22	Sinkiang, Jehol, Chahar and Suiyuan.
1913	23	Jehol, Chahar and Suiyuan.
1914	24	Kweichow and Suiyuan.
1915	23 (24)	Yunnan, Szechwan and Suiyuan. Yunnan totals given in 1916 issue.
1916	21 (22)	Kwangtung, Szechwan, Yunnan, Kweichow & Suiyuan. Kwangtung totals given in 1917 issue.
1917	22	Kwangsi, Szechwan, Yunnan and Kweichow.
1918	20	Hunan, Szechwan, Kwangtung, Kwangsi, Yunnan and Kweichow.
1919	12	Fengtien, Heilungkiang, Kiangsi, Chekiang, Hupoh, Hunan, Kansu, Sinkiang, Szechwan, Kwangtung, Kwangsi, Yunnan, Kweichow and Suiyuan.
1920	10	Fukien and Jehol in addition to those not reporting in 1919.
1921	6	Only Honan, Shansi, Kiangsu, Anhwei, Shensi & Chahar reported.

As will be seen from Tables I to X below, the figures of the provinces and districts which reported are often obviously inaccurate. At first the Ministry referred them back to the Provincial Industrial Boards for correction, but later it was found that such attempts often proved futile. In some cases they are marked out as suspicious, yet we find many more inaccuracies not so marked, and we have traced them to the provinces which are responsible for them. What the correct figures should be can better be guessed than accurately determined. Where the 1919 and 1920 figures for 10 to 12 provinces approximate those of the earlier years, there is ground for doubt that the latter are under-estimates.

TABLE I.

**Farming Families and Land Acreage.**

*(a. In thousand mow, 6½ mow equal an acre)*

Year.	Number of Families engaged in farming.	Farming Land. (a)	Vegetable Garden. (a)	Total. (a)
1914	59,402,315	1,394,146	184,201	1,578,347
1915	46,776,256	1,319,515	122,818	1,442,333
1916	59,322,504	1,384,937	125,038	1,509,975
1917	48,907,853	1,258,364	106,822	1,365,186
1918	43,935,478	1,217,279	97,193	1,314,472
1919	29,548,529	863,745	73,254	936,999
1920	27,422,986	833,674	71,316	904,990
1921	16,887,751	566,122	59,548	625,670

**TABLE II. (First half)**  
**Principal Agricultural Products.**  
*(In million piculs of 100 catties or 133 lbs each)*

Product	1914	1915	1916	1917
Rice	2,133	2,091 (a)	538	526
Wheat & Barley	352	344	456	293
Beans	128	91	114	147
Millet	18	29	21	468 (b)
Corn	43	44	38	32
Kaoliang	111	100	95	93
Groundnuts	37	219 (c)	56	27
Potatoes	157	109	91	47
Mellons	163	125	175	46
Vegetables	297	856 (d)	217	134
Turnips	96	101	25	38
Sugarcane	81	36	12	16
Fruits	3,817 (e)	1,682 (e)	232	208
Hemp, Jute, etc.	15	19	3	4
Cotton	15	89	19	30
Tobacco	22	7	12	8
Medicine (f)	84	1 (g)	2	2
Tea	7	4	1	1

- (a) Include very high figures for Kwangtung, 1,486 and 1,428 respectively. Figures for later years from that province give only 170 to 180 million piculs.
- (b) Include other varieties of millet hitherto not included.
- (c) Figure marked as suspicious in original publication.
- (d) Shantung reported 584 million piculs of vegetables in this year, which is marked as suspicious in the original publication.
- (e) Hunan reported 1,421 million piculs in 1914 and 1,503 million

TABLE II. (Second half)  
Principal Agricultural Products.

(In million piculs of 100 catties or 133 lbs each)

1918	1919	1920	1921	Products
302	96	88	70	Rice
431	336	424	342	Wheat & Barley
175	138	133	99	Beans
234 (b)	246 (b)	190	213	Millet
57	54	65	56	Corn
275	249	191	181	Kaoliang
33	33	44	29	Groundnuts
83	40	10	1	Potatoes
51	39	25	23	Mellons
225	177	161	114	Vegetables
49	39	46	11	Turnips
7	6	0.2	0.2	Sugar-cane
170	157	148	49	Fruits
5	4	3	1	Hemp, Jute, etc.
23	33	22	17	Colton
13	11	11	12	Tobacco
2	1	1	2	Medicine
1	1	0.3	0.3	Tea

piculs in 1915. Kwangtung reported 1,806 million piculs in 1914. These figures are all many times larger than those of other years, and are probably mistakes.

(f) All kinds of medicine of vegetable kingdom.

(g) Only about half a million piculs.

Figures for first seven products in the list were originally reported in *tan* or other units, but reduced to piculs by the Ministry. Figures for potatoes and the following products are given by the Ministry in catties, but reduced to piculs by the author.

**TABLE III.**  
**Live Stock, Poultry and Fishery Products.**  
*(Fishery products in million dollars; all others in million heads)*

Item	1914	1915	1916	1917	1918	1919	1920	1921
Horses .....	4.9	4.7	4.4	4.6	4.3	1.9	1.9	0.6
Cattle .....	21.9	22.8	18.2	15.3	12.4	7.6	6.2	4.5
Donkeys .....	4.3	5.1	3.6	4.9	4.9	3.7	3.4	1.8
Sheep & Goats .	22.1	23.9	22.7	24.3	23.3	11.6	10.3	7.6
Hogs .....	76.8	60.2	50.6	41.2	37.8	22.4	18.3	12.6
Chickens (a).....	...	...	...	278.7	149.6	128.5	88.9	53.2
Ducks (a).....	...	...	...	65.1	52.2	41.3	30.0	13.8
Geese (a).....	...	...	...	10.4	5.7	4.7	3.9	4.0
Fishery products	208.8	251.8	219.4	78.7	68.8	61.4	35.9	22.8

(a) Not reported until 1917.

**TABLE IV.**  
**Number of Trees Planted and Acreage.**  
*(Trees in millions; acreage in million mow)*

Year	Acreage	Number of Trees Planted
1914	73.0	5,232
1915	93.8	6,049
1916	88.2	7,351
1917	46.6	3,337
1918	30.2	2,381
1919	8.1	1,209
1920	3.7	293
1921	5.8	514

TABLE V.

## Silk Statistics.

Year	Acreage of Mulberry Farms. (in thousand mow)	Production (in thousand catties)	
		Cocoons.	Silk.
1914	4,290	1,493,526 (a)	73,078
1915	5,393	580,622	504,328 (b)
1916	13,642	256,537	54,537
1917	13,519	905,135	35,838
1918	4,276	208,939	30,249
1919	2,487	189,437	30,355
1920	2,468	129,093	17,799
1921	2,281	117,266	16,756

(a), (b). These two figures are too high, due probably to mistakes in reporting, compiling or calculation. For instance, in the case of silk, Kiangsu reported in 1914 11 million catties, and in 1915, 447 million catties, which latter is responsible for the high total figure of that year. Similarly, Chekiang reported 997 million catties of cocoons in 1914 and only 67 million catties in 1915. Yunnan reported 207 million catties in 1914 and did not report in 1915. On the other hand, Kiangsu reported 45 million catties in 1914 and 234 million catties in 1915. The high figure of 1914, compared with later years, is a result of these abnormal increases and decreases, but it is hard to determine if the reported changes involve mistakes.

Although manufacturing statistics were first collected, they seem to contain more inaccuracies than the agricultural data. The 1912 and 1913 figures are often more obviously wrong, due probably to lack of experience in collecting and compiling them. The total number of factories and factory laborers is much too low, compared with what it is now, yet there is no way to determine that it is wrong, because the later issues cover only a small portion of the country and the earlier ones refer to conditions a decade or more ago. Only a word of warning may be given so that too much accuracy will not be attributed to these figures. Disagreements between Tables VI, VII, VIII, and IX have been checked and corrected.

**TABLE VI**  
**Number of Factories.**

Year	Using power	Not using power	Total
1912	363	20,386	20,749
1913	347	21,366	21,713
1914	360	19,992	20,352
1915	488	20,258	20,746
1916	506	16,581	17,087
1917	481	15,255	15,736
1918	422	13,952	14,374
1919	360	10,155	10,515
1920	384	6,140	6,524

**TABLE VII**  
**Number of Factory Laborers.**

Year	Male	Female	Total
1912	421,994	239,790	661,784
1913	418,304	212,586	630,890
1914	391,126	233,398	624,524
1915	403,448	245,076	648,524
1916	336,078	239,954	576,032
1917	317,847	237,745	555,592
1918	307,320	181,265	488,605
1919	226,690	183,589	410,279
1920	245,673	167,367	413,040



**TABLE VIII.**  
**Number of Factories, by Industries.**

Industry	1912	1913	1914	1915	1916	1917	1918	1919	1920
Textile	4150	4642	4273	5367	4408	3565	3575	3060	2090
Machine	2393	2524	2182	1701	1742	1398	1432	1000	888
Chemical	7567	6030	6910	6690	5765	5581	4862	3331	1689
Food	4801	6175	5308	5108	3621	3435	3151	1967	1269
Special	92	158	350	348	27	308	13	22	19
Miscellaneous	1746	2184	1329	1532	1524	1449	1341	1135	569
<b>Total</b>	<b>20749</b>	<b>21713</b>	<b>20352</b>	<b>20746</b>	<b>17087</b>	<b>15736</b>	<b>14374</b>	<b>10515</b>	<b>6524</b>

**TABLE X. (First half)**  
**Statistics of Principal Manufactured Products.**  
*(in million dollars)*

Product	1912	1913	1914	1915	1916
Vegetable oils .....	2,164	144	127	119	180
Liquor (a) ... ..	949	38	111	104	103
Sugar .....	43	23	23	43	53
Flour (b) .....	372	22	76	46	116
Silk fabrics .....	80	124	37	40	36
Cotton fabrics .....	90	116	120	343	158
Ramie fabrics .....	13	9	10	10	14
Varnish .....	11	3	1	2	1
Vegetable indigo .....	14	914 (d)	19	17	13
Bricks & tiles .....	40	40	77	62	533 (e)
Paper .....	27	38	46	54	34
Leather .....	19	16	16	63	27
Porcelain & pottery.....	11	18	17	13	11
Lacquerware .. .....	16	15	12	15	13
Metallic wares .....	67	80	77	93	76

(a) Vegetable oils include bean, sesamum, groundnut, rape-seed, cotton-seed and other oils.

(b) Flour includes wheat, bean, arrow-root, potato and other kinds of flour. The 1912 figures for oil, liquor and flour are apparently too high, and probably involve mistakes.

(d) Szechwan reported in this year 902 million dollars worth of indigo produced, which is apparently a mistake.

(e) Kiangsu reported 505 million dollars worth of bricks in 1916 and 874 million dollars in 1917, which are apparently mistakes.

TABLE IX.

## Number of Laborers, by Industries. (in thousands)

Industry	1912	1913	1914	1915	1916	1917	1918	1919	1920
Textile	228	249	288	303	286	293	236	241	301
Machine	33	36	37	26	27	22	25	18	18
Chemical	155	95	118	120	111	99	93	66	42
Food	209	182	142	151	122	107	103	57	37
Special	5	4	9	13	1	5	1	1	1
Miscellaneous	31	64	30	35	28	29	30	27	14
<b>Total</b>	<b>661</b>	<b>630</b>	<b>624</b>	<b>648</b>	<b>575</b>	<b>555</b>	<b>488</b>	<b>410</b>	<b>413</b>

NOTE: Textile industries include dyeing and bleaching. Food industries include the manufacturing of beverages. Special industries include three lines only—electricity, water supply and metal refining.

TABLE X. (Second half)

## Statistics of Principal Manufactured Products.

(in million dollars)

1917	1918	1919	1920	1921	Product
193	132	94	91	69	Vegetable oils .....
166	110	75	63	57	Liquor (a) .....
19	12	9	2	3	Sugar .....
102	140	183	200	369(h)	Flour (b) .....
33	34	36	20	17	Silk fabrics .....
192	185	211	151	128	Cotton fabrics .....
17	13	3	3	3	Ramie fabrics .....
2	2	1 (c)	1 (c)	1 (c)	Varnish .....
22	14	2	43 (g)	41 (g)	Vegetable indigo.....
909	151	39	44	23	Bricks & tiles .....
27	32	20	11	7	Paper .....
34	30	23	21	9	Leather .....
15	17	12	11	6	Porcelain & pottery .....
6	6	4	3	2	Lacquerware .....
189(f)	251	203	224	126	Metallic wares .....

(c) Only about half a million.

(f) The high figures in 1917, 1918 and 1919 are due to the inclusion of many metallic wares hitherto not included.

(g) Shensi reported 30 million dollars worth of indigo produced in 1920, and 36 million in 1921.

(h) Shensi reported 315 million dollars worth of flour produced.

The Statistical Annual also contains mining statistics, but as the Government Geological Survey attached to the Ministry has more reliable figures collected by its own field agents, or estimated after much research, the latter are adopted in the following tables.

Table XI gives the estimated quantity and value of minerals produced in 1925, being the totals of two detailed tables prepared by the Survey which give separate figures for each province or district. In some provinces, the quantity produced is taken to be the same as that of some previous year, which is an actual production figure. In others, the quantity of original exports recorded by the Maritime Customs for the province is used. In still others, railway transportation statistics serves as the basis of the estimate. In spite of these efforts, there are some provinces known to produce certain minerals, yet no estimate could be made, and the total given in the table must fall below what was actually produced in that year.

After the quantity of production has been ascertained, the estimated value is obtained by multiplying the quantity of each mineral with a unit value. The latter is based on Shanghai wholesale prices published by the Government Bureau of Markets, the average value in the Customs records, or the market quotations of New York. When the value of both metal and ore is given, only one is included in the total, not both. In the case of some provinces, like Anhwei and Hunan, where the ore production figure is supplementary to that of the metal, both figures are included. The value of coke is not included in the total, yet the value of different varieties of coal already amounts to \$200,289,924, while that of other non-metals put together is only \$57,554,243. The total value of metals is \$67,034,714.

**TABLE XI**  
**Estimated Production of Minerals in 1925. (a)**

Mineral	Tons (b)	Dollars
<b>A. Metals.</b>		
Iron	369,617	\$14,784,680
Iron ore	1,519,021	4,557,063
Manganese ore	43,439	1,563,804
Tungsten ore	5,282	5,282,000
Gold (taels)	197,900	6,926,500
Silver (taels)	35,569	46,240
Copper	1,114	746,380
Lead	1,505	496,650
Lead ore	10,097	807,760
Zinc	1,199	410,330
Zinc ore	39,223	784,460
Tin	9,354	19,643,300
Quick-silver	470	1,546,300
Antimony ore	2,181	327,150
Antimony crude	2,954	1,033,900
Antimony regulus	16,132	10,163,160
Arsenic oxide	1,547	796,550
Bismuth ore	60	120,000
<b>Total, metals (c)</b>		<b>67,034,714</b>
<b>B. Non-Metals:</b>		
Anthracite	3,733,579	37,335,790
Bituminous coal	20,277,949	162,223,590
Lignite	243,514	730,542
Coke	696,535	17,388,375
Petroleum (barrels)	1,180	4,720
Kaolin	88,196	1,787,920
Cement (barrels)	2,512,714	10,050,856
Lime	85,000	850,000
Building stones	—	1,836,672
Salt	3,639,000	36,390,000
Gypsum	67,000	1,072,000
Salt-petre	5,600	224,000
Natural soda	61,500	3,075,000
Phosphates	13,400	201,000
Alum	11,022	661,320
Asbestos	213	27,690
Talc	31,516	650,320
Magnesite	13,773	206,595
Dolomite	46,500	232,500
Sulphur	2,348	143,040
Fluorite	4,498	89,960
Abrasives	2,583	26,530
Soapstone ware	112	24,120
<b>Total, non-metals</b>		<b>257,844,167</b>
<b>Total, metals and non-metals</b>		<b>324,878,881</b>

(a) Special Report of Geological Survey of China, Number 2, December, 1926.

(b) All quantities are in tons, unless otherwise specified. A tael of gold or silver weighs about an ounce. A barrel of petroleum contains 42 gallons. A ton of cement weighs 376 pounds.

TABLE XII.

Mining Area by Mineral Products.<sup>(a)</sup>

Mineral		Area in June, 1921 (square li)	Area in June, 1924 (square li)
煤	Coal	2,698.226 方里	3,805.004 方里
金	Gold	274.116	295.358
鐵	Iron	263.368	288.612
銅	Copper	210.188	216.217
鉛	Lead	81.606	87.309
銻	Antimony	37.945	37.945
菱 鐵 礦	Magnesite	36.640	36.640
石 綿	Asbestos	30.175	33.646
錫	Tin	27.101	27.101
錳	Manganese	21.379	26.886
鉬	Molybdenum	18.224	18.224
螢 石	Fluorite	14.618	16.408
硫 磺	Sulphur	9.474	12.317
長 石	Feldspar	7.380	12.286
銀	Silver	10.798	12.277
滑 石	Talc	11.048	12.049
石 墨	Graphite	5.522	11.440
鋅	Zinc	10.144	10.144
黃 鐵 礦	Pyrite	7.341	7.341
鉛 銀	Lead-silver	6.565	6.565
磷 灰 石	Fluorapatite	5.888	5.888
鎢	Wolfram	5.465	5.465
石 膏	Gypsum	1.575	5.002
鉛 鋅	Lead-zinc	2.834	2.834
雲 母	Mica	2.032	2.032
砒 礬	Arsenic	0.653	0.653
重 晶 石	Barite	0.102	0.286

(a) Data from Special Report of Geological Survey of China, Number 2, December, 1926. All mining areas in square li with three decimal places.

TABLE XIII

## Mining Area by Provinces, (a)

Province	Mining Area		Province	Mining Area	
	June, 1921 (d)	Dec., 1919		June, 1921 (d)	Dec., 1919
	<i>Square li</i>	<i>Square li</i>		<i>Square li</i>	<i>Square li</i>
Shantung	723.208	477	Chekiang	59.514	48
Chihli (b)	672.637	692	Suiyuan	46.986	29
Kirin	385.992	300	Fukien	40.422	35
Fengtien	380.636	373	Szechwan (c)	36.713	67
Jehol	231.586	206	Yunnan	27.367	121
Shansi	218.005	256	Chahar	13.585	7
Anhui	197.805	142	Kwangtung	10.264	4
Heilungkiang	196.797	186	Kwangsi	6.079	4
Honan	144.032	134	Kansu	4.000	4
Kiangsi	126.787	48	Shensi	1.000	1
Hunan	79.603	64	Kweichow	...	...
Hupei	70.115	50	Sinkiang	...	...
Kiangsu	64.411	70			

(a) Special Report of the Geological Survey of China, Number 2, December, 1926.

(b) Including the Metropolitan District.

(c) Including the Szechwan Marches, now known as Sikang Special Administrative District.

(d) Mining area in June, 1921 in *square li*, with three decimal places. No decimals in 1919.

**TABLE XIV.**  
**Mineral Production by Provinces, 1925.<sup>(a)</sup>**

Province	Value of Mineral Products	Province	Value of Mineral Products.
Fengtien	\$ 67,704,708	Fukien	5,939,140
Chihli	57,623,286	Anhwei	4,591,610
Hunan	27,021,474	Kweichow	4,429,800
Yunnan	23,046,540	Chekiang	2,817,120
Shansi	21,680,296	Kwangsi	2,602,232
Shantung	20,706,196	Jehol	2,224,828
Honan	14,157,876	Suiyuan	2,100,000
Szechwan	12,926,770	Kansu	2,011,400
Kiangsi	12,343,784	Sinkiang	1,703,000
Kwangtung	10,264,689	Kirin	1,345,430
Kiangsu	9,983,000	Outer Mongolia	950,000
Hupeh	7,952,780	Shensi	877,380
Heilungkiang	6,535,542	Chahar	800,000

(a) Special Report of the Geological Survey of China, Number 2, December, 1926.

#### Financial Statistics.

The first National Budget in the modern form was prepared in the last year of the Manchu dynasty, for the year following. As the Manchu house was soon overthrown, that budget was completed by the Republican Government, and became the Budget of the First Year of the Republic. Since then there have been five budgets officially published by the Ministry of Finance. In 1923 the Ministry published a budget of the Central Government offices only, and the Financial Readjustment Commission compiled one for the whole nation for 1925. Provincial Governments have from time to time published provincial budgets for deliberation in their respective legislatures.

A mass of statistics have been compiled in recent years by both the Government and private individuals

relative to the National Debt. As this has been mainly contracted through the Ministries of Finance and of Communications, the official accounts are prepared by these two offices. General loans, domestic and foreign, as well as the Boxer Indemnities, are under the management of the former Ministry, and their accounts are published by it. The Ministry of Communications statistics refer to railway and telegraph loans. The Financial Readjustment Commission has also published many detailed tables of both classes of debts. Some provinces have published their debt statistics.

As the customs revenue is one of the largest items in the National Budget, the figures are of much importance, and they are published every year by the Chief Inspectorate in the Customs Reports. The Salt and the Post Office Administrations have annual reports of the revenue and expenditure under their control. Very detailed railway accounts, as well as railway operation statistics, are published by the Ministry of Communications. The more important statistics of public finance are given in Tables XV to XVII.



TABLE XV.

## Chinese National Budgets. (a)

	1912	1913	1914	1916	1919	1925
A. Revenue:						
I. Ordinary—						
1. Land Tax	\$76,545	\$79,181	\$76,859	\$95,973	\$86,845	\$87,516
2. Customs Revenue	67,121	66,970	78,773	71,467	93,269	120,366
3. Salt Revenue	71,280	77,401	84,880	84,771	98,815	98,859
4. Likin & Other Goods Taxes	36,584	36,877	34,176	40,271	39,225	45,672
5. Regular & Miscel. Taxes	32,400	33,725	28,000	32,342	29,183	28,942
6. Regular and Miscellaneous Assesments	9,928	3,174	4,947	14,068	4,333	4,769
7. Government Enterprises	20,710	7,850	4,064	2,621	2,411	1,873
8. Misc. Income of Provinces	24,548	12,723	5,134	6,928	5,579	4,562
9. Central Government Office Income	—	—	4,621	1,635	3,106	2,803
10. Special Revenues of Central Government	—	—	29,611	76,307	47,072	47,841
Sub-total ... ..	339,116	317,901	351,065	426,383	409,838	443,203

(a) The 1912, 1913, 1914 and 1926 budgets are taken from Chia Shih-yl, Financial History of the Republic. The figures in some cases differ from those in the China Year Book, but Chia's figures are known to have been copied directly from official records. The 1919 figures are taken from the official records of the Ministry, and the 1925 figures from the unofficial budget prepared by the Financial Readjustment Commission.

TABLE XV (continued).

	1912	1913	1914	1916	1919	1925
II. Extraordinary—						
1. Land Tax	\$ 2,408	\$ 3,223	\$ 2,369	\$ 1,581	\$ 3,703	\$ 2,565
2. Customs Revenue	—	1,254	630	879	696	—
3. Salt Revenue	83	164	—	—	—	—
4. Likin & Other Goods Taxes	—	6	10	19	27	27
5. Regular & Miscellaneous Taxes	232	0.4	—	—	—	—
6. Regular & Miscellaneous Assessments	643	132	—	4,496	3,911	—
7. Government Enterprises	205	634	364	17	31	82
8. Miscellaneous Income of Provinces	—	10,116	1,575	338	293	1,246
9. Central Government Office Income	888	230	1,406	1,359	3,520	81
10. Special Revenue of Central Govt.	—	—	—	17,052	17,452	14,439
11. Misc. Income of Central Govt.	7,202	—	—	—	—	—
12. Income from Bond Issues	—	223,370	25,082	20,000	50,948	—
Sub-total	11,661	239,130	31,436	45,741	80,581	18,440
Total Revenue	350,777	557,031	382,501	472,125	490,410	461,643

TABLE XV (Continued).

	1912	1913	1914	1916	1919	1925
B. Expenditure :						
I. Ordinary—						
1. Foreign Affairs	\$ 3,719	\$ 3,293	4,229	\$ 3,277	\$ 4,807	\$ 4,746
2. Interior	5,424	39,618	42,672	49,654	43,280	47,496
3. Finance	154,530	210,345	53,344	53,532	39,154	39,871
4. War	96,880	136,865	134,062	135,814	129,589	262,541
5. Navy	11,723	7,666	4,803	17,102	9,194	15,151
6. Justice	10,135	14,672	7,258	7,666	10,323	13,477
7. Education	6,416	5,207	3,277	12,611	6,059	7,057
8. Agriculture & Commerce	5,669	5,083	2,277	3,762	3,257	4,563
9. Communications	4,333	935	1,936	1,577	1,866	3,277
10. Mongolian & Tibetan Affairs	1,796	—	1,065	947	1,319	—
11. Central Government Offices	—	—	—	—	22,441	22,967
Sub-total	300,625	423,684	254,923	285,942	271,289	421,146

TABLE XV (concluded).

	1912	1913	1914	1916	1919	1925
<b>II. Extraordinary—</b>						
1. Foreign Affairs	\$ 625	\$ 1,013	—	\$ 826	\$ 1,168	\$ 3,030
2. Interior	882	4,264	—	2,106	4,891	4,140
3. Finance	10,158	181,568	—	175,303	8,150	8,148
4. War	5,522	26,910	3,526	6,439	78,244	16,104
5. Navy	6,566	1,307	10	103	185	3,907
6. Justice	333	370	—	45	7	238
7. Education	991	1,702	—	225	462	654
8. Agriculture & Commerce	2,247	960	—	377	442	925
9. Communications	330	458	—	113	163	603
10. Mongolian & Tibetan Affairs	100	—	—	40	50	—
11. Central Government Offices	—	—	—	—	2,748	8,997
12. Loan Services	—	—	98,565	(b)	127,963	166,469
Sub-total	27,754	218,552	102,101	185,577	224,473	213,215
Total Expenditure	328,379	642,236	357,024	471,579	495,762	634,361

(b) \$137,683 included under B-II-3.

TABLE XVI.

## China's National Debt.

Classification	Aug. 1, 1916	Oct. 1, 1922	Jan. 1, 1926
	(a)	(b)	(c)
<b>A. Ministry of Finance:</b>			
<b>I. Funded debt—</b>			
1. Domestic	\$91,242,120	\$208,409,592	\$195,842,742
2. Foreign	1,512,389,865	992,684,575	811,017,611
Sub-total	1,603,631,985	1,201,094,167	1,006,860,353
<b>II. Floating debt—</b>			
1. Foreign	29,710,201	258,253,823	312,581,832
2. Domestic			
a. Bonds	—	130,400,000	87,345,049 (d)
b. Treasury notes	13,236,988	33,767,581	59,114,384
c. Salt surplus loans	—	23,503,945	44,112,388
d. Bank advances	(e)	40,890,185	69,237,681
Sub-total	42,947,189	486,815,534	572,391,334
Grand total	1,646,579,174	1,687,909,701	1,579,251,687
<b>B. Ministry of Communications:</b>			
1. Railway debt	465,798,060 (g)	669,938,983	73,988,780 (f) 520,907,121 (g) 162,017 (f)
2. Telegraph debt	(h)	53,334,703 (i)	39,616,506 (g) 13,207,826 (f) 1,444,137 (g)
3. Other debts.	—	55,689,568	649,326,387
Total	465,798,060	778,963,254	
Total, both Ministries	2,112,377,234	2,466,872,955	2,228,578,074

(a) Chia Shih-yi, Financial History of the Republic.

(b) Official figures of the Ministries. The Ministry of Communications figures are for Feb. 1, 1923.

(c) Figures compiled by the Financial Readjustment Commission.

(d) This is the amount actually issued, while the 1922 figure represents the amount authorised. (e) Included under Treasury notes. (f) Domestic. (g) Foreign. (h) Included under B-1.

(i) Not including a German advance of 440,800 marks.

TABLE XVII.

## Central Government Revenues.(a)

*(In thousand dollars)*

Revenue	1922	1923	1924
<b>Customs:</b>			
Maritime ... ..	\$89,038	\$95,256	\$104,392
Native, within 50 li radius	6,543	6,735	6,376
Native, all others	—	—	9,912 (b)
Salt ... ..	99,228	92,061	81,433
Wine and tobacco ...	15,069	15,837	— (c)
Stamp Tax ... ..	3,382	3,004	3,047
Post Office ... ..	3,716	4,456	2,753
Railways surplus ...	24,126	23,753	22,641
<b>Total</b>	<b>241,102 (d)</b>	<b>241,102 (d)</b>	<b>230,554 (d)</b>

(a) Taken from figures published by the Financial Readjustment Commission.

(b) Not all native customs of the second class reported in 1924. For those that did not report, figures of former years or standard official estimates are used instead.

(c) The amounts actually remitted to the Central Government were \$1,449,848 in 1922 and \$889,269 in 1923. The 1924 figures are yet unavailable.

(d) Many revenues, like the wine and tobacco revenue, are partly retained by the provinces. Hence the totals do not represent the actual amounts received by the Central Government.

Concerning the money market, the Shanghai Bankers' Weekly, the official organ of the Shanghai Bankers' Association, has published many useful statistics, such as the Shanghai silver and dollar rates, domestic bond quotations, domestic and foreign exchange rates, money movement statistics, and quotations of certain staple commodities like silk, tea and rice. Statistical charts accompany the figures. The Peking and Hankow Bankers' Associations have published similar data, though not so much as the Shanghai Association.

As more statistics of this nature have been compiled by newspapers and magazines, it would be too tedious to name all of them. Many of these sources, as well as those of public finance, are already well known to the public, and need not be mentioned in this paper. The industrial statistics of the Ministry of Agriculture and Commerce are alone given at length because they are not generally known.

Price statistics have also been regularly collected by the Government Bureau of Markets for Shanghai and the Kwangtung Provincial Statistical Bureau for Canton. They represent wholesale prices, and index numbers have been compiled from them. For the last year and a half, the Bureau of Economic Information has collected retail prices of commodities affecting the cost of living of the working classes in Peking, Shanghai and Mukden, and the Peking data have been published in the April and June (1927) issues of the Chinese Economic Journal. Private individuals, like Meng and Gamble, have also contributed very much to the price statistics of China.<sup>a</sup> Abstracts of these price and cost of living statistics are found in Tables XVIII to XXI.

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a. Tien-pei Meng and Sydney Gamble, Prices, Wages and the Standard of Living in Peking.

**TABLE. XVIII**  
**Index Numbers of Wholesale Prices in Shanghai (a)**  
**February, 1913 = 100**

	Cereals	Other Food Products	Textiles	Metals	Miscellaneous Goods	General Average
No. of Commodities	14	26	27	11	69	147
February, 1913	100.0	100.0	100.0	100.0	100.0	100.0
1920	126.2	128.3	148.2	150.0	206.7	152.0
March	129.9	123.6	159.7	152.5	203.6	153.8
June	135.0	124.3	152.6	162.9	224.7	159.9
September	128.6	125.8	143.4	154.2	212.8	153.0
December	119.2	132.8	136.9	147.4	200.5	147.4
1921	126.7	131.0	147.7	150.4	195.3	150.2
March	115.4	138.9	140.9	148.1	211.2	150.9
June	126.6	129.6	150.2	156.3	195.4	151.6
September	139.7	133.6	158.4	150.1	186.4	153.6
December	139.3	131.5	154.8	141.5	178.3	149.1
1922	145.5	133.7	148.1	133.5	167.1	145.5
March	157.9	138.6	154.5	136.2	170.4	151.5
June	145.6	131.1	149.0	131.3	163.6	144.1
September	140.3	129.3	138.7	129.5	160.2	139.6
December	140.7	141.7	151.4	138.1	170.7	148.5
1923	149.5	153.4	157.8	158.1	162.9	156.4
March	149.2	156.2	155.7	162.5	170.1	158.7
June	153.7	152.6	155.8	157.8	156.3	155.2
September	153.2	150.3	154.8	166.9	158.9	156.8
December	141.2	155.8	165.7	161.0	163.6	157.5
1924	142.5	155.0	157.3	161.0	153.9	153.9
March	141.2	154.9	165.8	172.0	153.7	157.5
June	138.6	156.4	156.0	154.1	154.1	151.8
September	148.1	153.0	146.7	146.3	151.2	149.1
December	148.1	151.1	157.5	179.7	150.7	157.4
1925	154.0	154.9	155.4	184.7	148.1	159.4
March	152.9	147.7	161.8	189.8	149.4	160.3
June	155.0	155.0	153.3	178.4	144.9	157.3
September	151.5	158.9	154.6	188.1	147.7	160.2
December	153.9	154.6	146.9	190.1	145.0	158.1
1926						
January	156.1	158.6	146.8	214.6	143.7	164.0
February	160.6	163.5	147.5	199.4	144.0	163.0
March	165.9	162.2	144.6	204.7	144.8	164.4
April	166.2	162.6	144.3	195.1	145.9	162.8
May	164.5	155.6	139.6	191.7	147.1	159.7
June	162.5	165.9	139.9	165.5	145.2	155.2
July	162.3	162.4	139.6	174.1	145.9	156.9
August	163.4	165.8	129.2	190.1	143.8	160.5
September	168.9	166.4	140.6	199.6	145.7	164.2

(a) Compiled by the Government Bureau of Markets in Shanghai.



	Cereals	Other Food Products	Textiles	Metals	Miscellaneous Goods	General Average
October	183.4	171.7	142.5	208.1	149.6	171.1
November	176.3	179.6	143.2	218.1	154.6	174.4
December	173.6	177.8	141.9	208.9	157.8	172.0
1927						
January	171.1	177.8	141.3	214.4	159.5	172.8
February	172.0	179.6	140.5	209.1	158.8	172.0
March	177.7	180.2	143.9	209.5	162.4	174.7
April	174.9	175.6	145.1	206.4	163.4	173.1
May	177.6	166.7	144.6	206.6	161.0	171.3

TABLE XIX.

Price Index Numbers in Canton (a)

	Cereals	Food Products	Textiles	Fuels	Metals	Miscellaneous	Average
No. of Commodities	20	65	43	14	41	22	—
Assigned Weight	20	30	10	15	10	15	—
1912	112.1	96.1	99.6	92.0	99.3	96.7	99.4
1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1914	96.2	103.1	106.3	108.9	102.8	107.5	103.6
1915	108.2	109.9	107.6	106.7	128.6	118.8	112.1
1916	109.3	114.7	112.0	123.7	148.3	123.7	119.4
1917	93.2	119.6	115.4	154.7	165.5	126.1	124.7
1918	109.4	129.3	120.9	165.0	170.1	126.0	133.4
1919	133.4	132.0	125.6	150.0	160.9	126.4	136.4
1920	126.5	135.1	131.4	153.2	145.7	126.0	135.4
1921	135.0	146.2	134.6	173.4	156.3	127.6	144.8
1922	148.2	150.8	138.9	188.7	164.0	133.0	153.4
1923	157.6	154.5	144.5	200.6	177.6	139.1	161.0
1924	174.7	164.4	149.3	237.2	184.2	149.7	175.6
1925	—	—	—	—	—	—	—
January	169.3	168.4	153.4	244.0	181.7	158.5	178.3
February	171.1	165.3	152.9	258.3	181.5	160.9	180.4
March	170.6	166.7	154.2	266.3	182.1	160.1	181.9
April	175.3	169.0	155.2	268.2	185.8	163.4	184.6
May	185.7	171.6	156.8	268.7	193.1	168.7	189.2
June	186.2	176.8	159.3	282.3	195.8	183.7	159.7

(a). Compiled by the Statistics Department of the Kwangtung Provincial Board of Agriculture and Industry. The annual average of 1913 is taken as 100.

TABLE XX.

## The "Provisional" Index Number of Cost of

## Living in Shanghai (a)

Annual Average of 1925=100

	Food Products	Fuel and Lighting	Clothing	Rent	Miscel- laneous Articles	General Average
No. of Commodi- ties	20	6	12	1	5	
1926						
January	115.9	104.6	107.9	100.0	98.0	108.8
February	119.6	97.6	110.8	100.0	98.0	110.8
March	131.3	98.5	110.5	100.0	95.3	116.9
April	137.1	109.6	109.3	100.0	94.2	119.9
May	137.4	105.4	103.3	100.0	94.2	119.6
June	141.2	107.0	101.1	100.0	99.4	121.5
July	146.1	110.6	100.9	100.0	96.9	124.0
August	151.0	100.7	101.7	100.0	96.7	126.5
September	162.1	113.4	100.6	100.0	96.1	132.3
October	163.1	118.0	102.1	100.0	101.1	132.9
November	152.2	119.2	96.5	100.0	102.5	126.9
December	145.6	122.7	95.5	100.0	97.2	123.5
Average, 1926	141.9	108.9	103.3	100.0	97.5	122.0
1927						
January	146.8	122.2	102.9	100.0	101.1	124.6
February	141.7	122.1	98.3	100.0	99.7	121.7
March	148.5	125.6	100.1	100.0	97.8	125.3
April	139.1	125.3	96.5	100.0	95.6	120.3
May	139.1	128.7	94.5	100.0	99.2	120.1

(a) Compiled by the Government Bureau of Markets in Shanghai.

TABLE XXI.

## Peking Wages and Cost of Living Index Numbers. (a)

*(Annual Average of 1913=100)*

Year	Cost of Living	Money Wages		Real Wages	
		Laborer	Coolie	Laborer	Coolie
1900	81	92	105	114	130
1901	86	99	121	145	177
1902	76	95	117	124	154
1903	84	90	112	108	133
1904	78	86	106	111	136
1905	75	85.5	105	114	140
1906	83	85	104	103	122
1907	87	76	94	88.5	108
1908	89	82	92	92	103
1909	89	77.5	87	88.5	98.5
1910	90	76	85	85.3	95
1911	100	103	103	103	103.5
1912	102	99	99	97.7	95
1913	100	100	100	100	100
1914	93	102	101.5	110	109
1915	88	99	99	112	111
1916	96	101	101	106	105
1917	102	108	108	106	105
1918	97	100	100	103	103
1919	88	97	97	111	111
1920	114	114	127	100	111
1921	117	106	117	91	100
1922	113	101	113	89	100
1923	118	104	112	88	95
1924	126	111	116.5	91	95
1925	—	161	156	112	108

(a) Compiled from Tables 9, 12 and 13 of Meng and Gamble, Prices, Wages and the Standard of Living in Peking, 1900-1924.

### Statistics of the Bureau.

The Bureau of Economic Information has been collecting economic statistics in China for the last seven years, although only a very small portion of the material thus collected has been published. It takes a good deal of time to obtain data from the various sources, but more time is required in checking up and passing on the figures. Sometimes months and years may elapse after the collection of certain figures, yet after much laborious work, they are found to be utterly valueless and have to be put away in the files or thrown into the waste-paper basket. Many pit-falls lie in the path of the Chinese statistician which are never thought of in Western countries. It is true that in the statistical returns of any country there are bound to be mistakes which the statistician must check up, but these probable errors are usually slight, and often offset one another. But in China it is quite a different matter. Due to the lack of a common system of weights and measures in use in all parts of the country, the mistakes may be two or three times the figures themselves.

To check one set of figures one must have for comparison some other data the accuracy of which is beyond question. For instance, if the per capita consumption data of certain products are doubted, they may be checked with the population, production, importation and exportation statistics. But these in themselves must be accurate. In China, however, there are no accurate population or production figures. Below, the Ministry of the Interior census for 1910 and the Customs and Post Office estimates are compared.<sup>b</sup> (The table does not include the territories of Tibet and Mongolia, while the population of the new Special

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b. China Year Book. The Post Office estimate has been checked with the original figures in the Postal Guide.

Administrative Districts is to a large extent included in the provinces from which they are now separated. The estimated population of Tibet is 6,500,000, and that of Mongolia is 760,000.)

Province	Census of 1910	P.O. Estimate of 1923	Maritime Customs Estimate of 1923
Anhwei	17,300,000	19,832,665	37,000,000
Chekiang	17,000,000	22,043,300	23,452,000
Chihli	32,571,000	34,186,711	29,400,000
Fengtien	14,917,000(1)	12,824,779	19,290,000(5)
Fukien	13,100,000	13,157,791	20,000,000
Heilungkiang	(1)	9,258,655(3)	(5)
Honan	25,600,000	30,831,909	55,000,000
Hunan	23,600,000	28,443,279	22,040,000
Hupei	24,900,000	27,167,244	24,947,000
Kansu	5,000,000	5,927,997	(6)
Kiangsi	14,500,000	24,466,800	24,467,000
Kiangsu	17,300,000	33,786,064	26,920,000
Kirin	(1)	(3)	(5)
Kwangsi	6,500,000	12,258,335	8,000,000(6)
Kwangtung	27,700,000	37,167,701	30,000,000
Kweichow	11,300,000	11,216,400	(6)
Shansi	10,000,000	11,114,951	(6)
Shantung	29,600,000	30,803,245	38,000,000
Shensi	8,800,000	9,465,558	(6)
Sinkiang	2,491,000	2,519,579	(7)
Szechwan	16,400,000(2)	49,782,810	76,613,000
Yunnan	8,500,000	9,839,180	9,839,000
<b>Total</b>	<b>327,079,000(8)</b>	<b>436,094,953(4)</b>	<b>444,968,000</b>

- (1) The Fengtien figure includes the figures for Kirin and Heilungkiang.
- (2) This represents the returns of only 5/7ths of the province.
- (3) The Heilungkiang figure is for both Heilungkiang and Kirin.
- (4) Not including one *hsien* in Chihli and one *hsien* in Fengtien.
- (5) This is the total of Fengtien, Kirin and Heilungkiang.
- (6) The Honan figure is the total of all provinces marked (6)
- (7) No figure given for Sinkiang.
- (8) This differs from the total in the China Year Book because of the inclusion of Sinkiang and the use of the original official figure for Szechwan as explained under (2).

Census of 1912-1916 of the following provinces compiled by the Ministry of Interior of the Republican Government gives quite different figures. Only the 1916 figures are reproduced below, showing numbers of families, males, females and total population, with 000 omitted.

Province	Families	Males	Females	Total
Chekiang	4,666	12,346	10,344	22,690
Chihli	4,298	12,839	10,465	23,304
M.D. (a)	602	1,813	1,548	3,361
Fengtien	1,896	7,045	5,562	12,607
Honan	5,963	16,188	14,430	30,618
Hupeh	5,261	15,097	12,148	27,245
Kiangsi	4,958	13,615	11,475	25,090
Kiangsu	6,183	17,185	15,738	32,923
Kirin	838	3,288	2,699	5,987
Shansi	2,110	6,015	4,514	10,529
Sinkiang	483	1,211	1,067	2,278

(a) The population of the Metropolitan District is included in Chihli in the other population statistics.

#### Production Statistics.

Similar difficulties are met with in production figures. In Chinese historical records, salt production statistics are given for a number of years, though not consecutively. Salt has long been a Government monopoly, and the statistics had a good deal to do with the public revenue. Data about rice in historical records do not represent the total quantities produced, but those handed to the Government as tax, or those produced on Government land.<sup>c</sup> As statisticians all know, the purpose of collecting statistics sometimes affects the figures themselves, and under the conditions mentioned above, these records were very apt to be under-estimates. Still, some data are better than none at all, and when such figures were no more collected, but, instead, records were kept only of percentages, even estimates

c. 文獻通考田賦考, 征權考

about production were unavailable until the Ministry of Agriculture and Commerce began to publish an annual statistical report in 1912, under the Republican regime. Nine issues have since appeared, but they contain many defects, which have already been pointed out.

China is still to a large extent controlled by custom and tradition. For all land long under cultivation, the production, as well as the annual rent, was usually fixed between landlord and tenant a couple of hundred years ago, and since then the actual rent paid from year to year has varied according to what may be considered a crop index number—namely, a percentage indicating the relation of the crop to the area cultivated. For instance, if 10 *mow* of land is under cultivation, and the grain that actually ripens in any particular season covers approximately seven-tenths of the area, then the crop is 70 per cent. An expert farmer can judge this percentage by a glance over the land just before the grain is harvested. The rent of that year is then figured at 70 per cent of the fixed rent—the nominal amount agreed upon hundreds of years ago. Similarly, the Government has a system of land tax exemptions based on this percentage, but not exactly in proportion to it, as is the landlord's rent. The tax is reduced 10 per cent when the crop is 40 or 50 per cent, 20 per cent when the crop is 30 per cent, etc.<sup>d</sup> Each district reports the average crop percentage of all land under its jurisdiction to the provincial authorities, which in turn report to the Central Government. Thus there are some crop or production statistics kept by the Government, but they are more in the nature of index numbers than absolute figures.

The Ministry of Agriculture and Commerce published its first statistics of manufactures and commerce in 1912 and

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d. 民國三年勘報災歉條例, Regulations Governing Bad Crops, 1914.

its first agricultural statistics in 1914. Production figures are given both in quantity and value. When the data of the same province or district are compared one year with another, the discrepancies are often so great that they cannot be readily explained. It is possible that those provincial or district officials who compiled the data of the first year were very conservative, and reported only the figures for the particular cereal in question,—for instance, barley,—while those of the second year might have included under the same heading many other kinds of grain resembling barley which are sometimes called by the same name. Or, it may be due to a wrong conversion of the local systems of weights. In an attempt to collect production and similar statistics for itself, other difficulties are also discovered by the Bureau.

#### Weights and Measures.

By far the chief difficulty confronting a Chinese statistical office is the question of weights and measures. In Western countries there are standard systems in use everywhere. For instance, it is entirely unnecessary to explain in Great Britain or the United States what a pound *avoirdupois* means, or insist upon its use in the statistical reports against metric or other weights. Even if the latter are used, their relation to the pound is also fixed, and they can be easily converted. Not so in China. What is called a catty or a picul in one district is different from a catty or picul in another, and even in the same district there are two or more different units used for different purposes while bearing the same name. An example will make this clear. Suppose a report shows that the yield per *mow* of rice land near Shanghai is two piculs, while that at Yunnanfu is 1/10th of a picul. This would apparently mean that the



productivity of land at these two places is 20 to 1. But it is not so. The actual ratio is only about five to two, because a picul in Shanghai means 150 catties, while at Yunnanfu it means 1,200 catties. Nor is a picul equivalent to the same number of catties in the same place, because in Heilungkiang, for instance, a picul of rice is 300 catties, while a picul of wheat is 600. In Shanghai, a picul of rice is 150 catties, and of wheat, 135. In Yunnan, the equivalents are 1,200 and 1,000 catties respectively.<sup>e</sup> There are still other equivalents for beans, Indian corn and other cereals. The ordinary equivalent of 133 1/3 lb. for a picul holds true only for the system of weights adopted by the Maritime Customs Service.

Investigations made by a special agent of the Bureau of Economic Information at Tsinanfu yield the following information.<sup>f</sup> In addition to the pound avoirdupois which is now widely used as weight unit in the commercial mart outside the city, Tsinan has five other units in common use in the city, known as the 3-catty-4-ounce, 3-catty-5-ounce, 3-catty-6-ounce, 3-catty-8-ounce and the half-size. The first four are distinguished from each other by tests with a string of 1,000 brass cash. If the string weighs three catties and four ounces on one instrument, that one is a 3-catty-4-ounce scale. Similarly with the others. A catty on the 3-catty-5-ounce scale is equivalent to a pound, while one on the 3-catty-4-ounce scale is a little more, and on the 3-catty-6-ounce and 3-catty-8-ounce scales is less, than a pound. All four are used in buying and selling groceries. The half-size scale, instead of being smaller as the name might indicate, is really larger, as a catty on that scale weighs approximately one and one-half pounds. It is used in weighing coal, hay, etc., both inside and outside the city.

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e. 農商部全國物價統計表 f. 1924.

Similarly, an "official *mow*" always contains 6,000 square feet (*yin-chao-chih* 營造尺 or construction measure), but at Tsinan, as at other places, there are many other kinds of *mow* which range from 8,000 to 17,500 square feet. The last one is approximately three times the size of an official *mow*. In northern Kiangsu there are semi-public lands known as *tun-tien* (屯田) which are always measured in *mow* twice the size of an official *mow*, while other lands are usually measured in terms of the latter.<sup>g</sup> One *chih* (foot) of cloth measure is generally one-tenth larger than one *chih* of wood measure at most places, but it does not mean that the former or the latter is the same everywhere. The former in Nanking is equivalent to 1.28 feet (English measure) while in Tsinan it is 1.16 feet. The latter in Nanking is 1.09, and in Tsinan 1.04. In Foochow, there are two kinds of cloth measures, one of which is equivalent to 0.39 and the other 0.305 metres. The silk merchants use only the former. The wood measures of the same city are 0.297 metres for fine timber as used in making picture frames, etc., and 0.30 metres for timber for ordinary construction purposes.<sup>h</sup> Han-kow has a whole list of linear measures, as given below:

Name	Used in Measuring	Equivalent in English Measure
漢尺 Han Chih	Silk, cloth, etc.	14 inches.
公尺 Kung Chih	Land, boats, etc. by the Government	12½ "
廣尺 Kwang Chih	Cantonese gauze or cloth	15 "
攤尺 Tau Chih	Timber	13½ "
小貨尺 Siao Mao Chih	Furs, ribbon, etc.	From 11 to 12½ inches.
營造尺 Yin Chao Chih	Construction materials	Same as Han chih.

g. Personal investigation.

h. Investigation of the Bureau in Nanking and Foochow in 1925.

HANKOW MEASURES.

Large cities usually have the most confused systems of weights and measures, because merchants from different provinces trade there, and bring their own measures with them. As time goes on, these measures may be modified to suit the local conditions and new units come into use which differ from both the local and the original imported measures. The confusion of linear measures in Hankow is but one example.<sup>i</sup> The following is a list of Hankow measures of capacity.<sup>j</sup>

Name	Used in Measuring	Equivalent in Fan Tou.
樊斗 Fan Tou	Rice and cereals	1
漢斗 Han Tou	" " "	0.93
衡斗 Heng Tou	Rice only	1.44
唐公斛 Tang-kung Hu	Miscellaneous cereals	1.46
梁公斛 Liang-kung Hu	" " "	1.46
擔 Picul (tan)	Rice and cereals	9.30

Another interesting illustration is provided in a digest of answers to questionnaires which Professor C. H. Corbett, of Yenching University, Peking, circulated among his students, who come from various parts of North China. The record is as follows:<sup>k</sup>

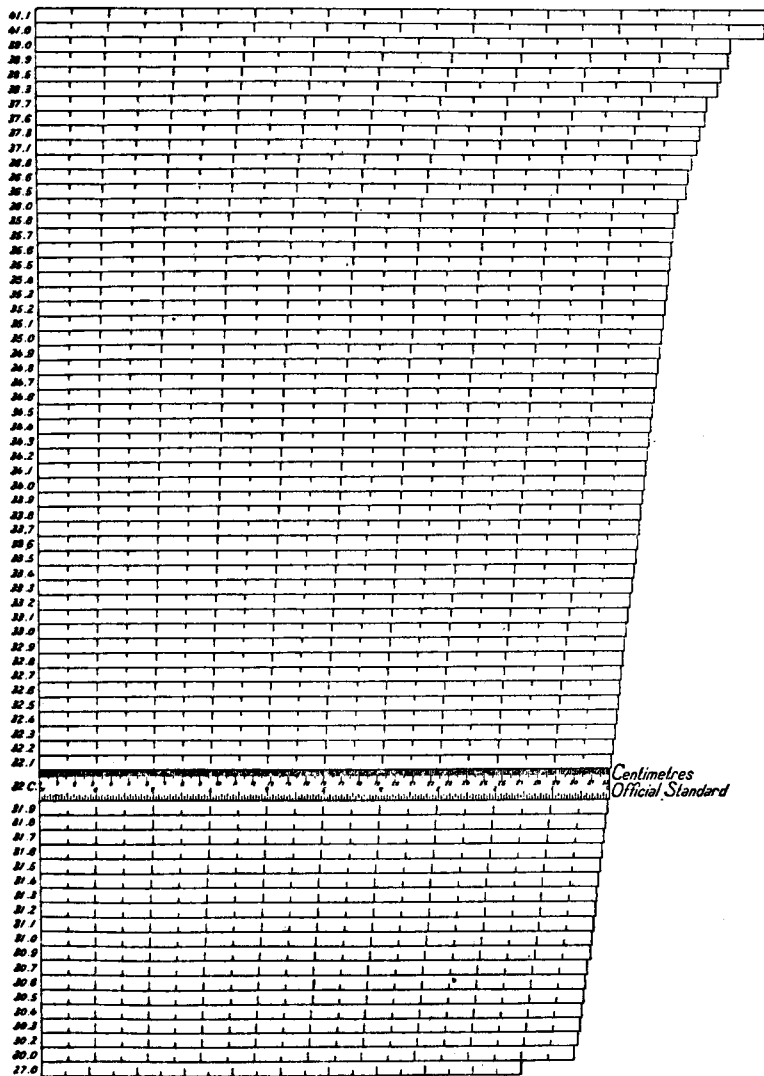
1. How do the *tou* (斗) measures compare in the towns near your home?

Answers received:—

1 <i>tou</i> is equal to	9.5 <i>sheng</i> (升)	7 <i>kuan</i> (管)	27 <i>chin</i> (斤)
	10	14	30
	11	16	34
	12	24	35
	14	25	50
	15	26	
	16	27	
		28	
		29	
		30	
		31	
		32	

i, j. Investigation of the Bureau in Hankow in 1925.

k. Supplied to the Bureau by courtesy of Professor Corbett.



The above diagram is prepared by the Bureau of Weights and Measures of the Ministry of Agriculture and Commerce, and represents the various foot-rules in use ineking, as compared with the official standard.)

(Even where towns have 10 *sheng* to the *tou*, still the *sheng* differ in size).

2. How do the number of *liang* (兩) in the catty (斤) compare in the towns near your home?

Answers: 1 catty (斤) is equal to 12 *liang* (兩)

14  
16  
17  
17.5  
18  
20  
24

3. How large is the *mow* (畝) in your locality?

Answers: 1 *mow* is equal to 60 square *chang* (方丈)

120  
180  
240  
360

4. In your neighborhood how many cash pass for 100?

Answers: 48, 49, 50, 80, 90, 94, 96, 98, 99, 100.

It should be mentioned here that the picul was originally a measure of capacity, and not of weight. Hence the great difference in its weight equivalents as given above. It generally consists of 10 *tou* (Chinese bushel), but at some places it may be more. (For instance, in Foochow, one picul contains 12 *tou*). A *hu* usually represents five *tou*, but in Foochow it is six *tou*, and in Hankow a kind of measure called *Sze-hu* (四斛) is  $2\frac{1}{2}$  *tou*.<sup>1</sup> The Central Government has adopted a uniform system of weights and measures, but so far the system has only been rigidly applied in Shansi province, where the provincial authorities inspect the instruments used by the merchants once every year.<sup>m</sup> In other localities, the standard is used only in official transactions, while the business men still cling to their old scales. The official standard system is as follows:

*Weight*

10 <i>Sou</i>	=	1 <i>Hao</i>
10 <i>Hao</i>	=	1 <i>Li</i>
10 <i>Li</i>	=	1 <i>Fen</i> (Candareen).

1. Investigation of the Bureau in Foochow and Hankow in 1925.

m. Investigation of the Bureau in Shansi in 1925.

10 <i>Fen</i>	=	1 <i>Ch'ien</i> (Mace).
10 <i>Ch'ien</i>	=	1 <i>Liang</i> (tael)=37.301 grammes.
16 <i>Liang</i>	=	1 <i>Ch'ien</i> (Catty)=596.816 grammes.

#### Capacity

10 <i>Sho</i>	=	1 <i>Ko</i>
10 <i>Ko</i>	=	1 <i>Sheng</i>
10 <i>Sheng</i>	=	1 <i>Tou</i> = 10.354688 litres.
5 <i>Tou</i>	=	1 <i>Hu</i>
2 <i>Hu</i>	=	1 <i>Tan</i> . Commodities, even liquids, such as oil, spirits, etc., are commonly bought and sold by weight.

#### Length

10 <i>Fen</i>	=	1 <i>Ts'un</i> (inch)
10 <i>Ts'un</i>	=	1 <i>Ch'ih</i> (foot) = .32 metre
10 <i>Ch'ih</i>	=	1 <i>Chang</i> = 3.2 metres
180 <i>Chang</i>	=	1 <i>Li</i> = 576 metres.

#### Currency.

The second difficulty in collecting statistics in China concerns currency. Until a decade ago, practically no two places had the same currency. Even now, although the Yuan Shih-kai dollar has become the national coin, silver in taels is still used in many localities. There are 72 standard taels in the whole country, which are standards in 72 large commercial centers. They do not include all the taels at these places, as each city generally has different taels for different purposes. Moreover, smaller towns do not necessarily adopt these standards, but have their own taels for local uses. A writer recently traced more than 170 taels in use throughout the country, but in actual practice there must be more. Taels differ in respect both of weight and fineness. The bankers know their relative par-values, but the actual rates of exchange between any two taels depend on the demand and supply of silver at the two localities concerned. There are also provinces, like Kwangtung (in which Canton is situated), where small silver dimes take the place of dollars, and all values are

quoted in terms of them. It would not make much difference if each dime always represented one-tenth of a dollar, but as the subsidiary coins do not contain silver of the same fineness as the dollars, the exchange ratio between the two is not fixed.

Brass cash has gradually disappeared from the big cities, but it still lingers in some country places. Copper coins nominally worth ten or twenty cash are in general use, but they are exchanged at Chengtu at 700 for a dollar, and at Peking at less than 400.<sup>n</sup> Things worth less than a dollar may be priced either in terms of cents or coppers, and there are interior towns where even such staple goods as grain are still sold in terms of coppers or cash. One *tiao* (吊) is nominally 1,000 cash or 100 coppers, but actually it differs widely according to the locality where the term is used. In Kiangsu, for instance, a *tiao* means 100 coppers. In Peking, on the other hand, it means only 100 cash. In Tsinan, there is a so-called "Peking money *tiao*" which should mean the same thing as one *tiao* in Peking, but actually it is about five times larger. It derives its name from a kind of Peking brass cash known as *ta-ko-er* (大筒兒), which used to circulate at the value of two cash. The term "Peking-money-*tiao*" should therefore be divided into two parts: the *tiao* in the ordinary sense of 1,000 cash to be exchanged for 500 of Peking money or *ta-ko-er*. As actual brass cash and *ta-ko-er* are now rare, copper coins take their place at the rate of one for 10 *ta-ko-er* (or twenty cash) instead of 10 cash. A further complication is added by the practice of giving the *tiao* a 2 per cent discount, making it worth 49 instead of 50 coppers.<sup>o</sup> In Kiangsu there are 993 and 997 *tiao*, representing respectively 993

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n. Investigation of the Bureau in Chengtu and Peking in 1926.

o. Investigation of the Bureau in Tsinan in 1924.

or 997 cash. In Mukden *fengpiao* (奉票), a kind of copper note, has become the standard of value, but has no fixed relation to silver dollars.

Suppose, now, that statistical reports show that a certain commodity is sold at two *tiao* in northern Kiangsu, four *tiao* in a Shantung district, ten *tiao* in a small town near Peking, and  $2\frac{1}{2}$  *tiao* in Kirin. No comparison of the prices can be made until it is definitely known what the *tiao* stands for in each case. The difference between 993 and 997 cash in Kiangsu is small, but it would make a great difference whether the Shantung district has the Peking-money-*tiao* of Tsinan or some other *tiao*. Similarly with a town near Peking, where the *tiao* may mean 100 or 1,000 cash. Besides, all these figures have no meaning unless it is known how the copper-silver exchange at one place compares with that at another. Generally it is better to find the dollar equivalents of these figures at the exchange rates prevailing when these figures are collected, because the rates may vary by 30 or 40 per cent a month later. Still, in some cases, both cash figures and dollar equivalents are necessary to an understanding of the real significance of the quotations.

#### **Coppers and Foreign Currencies.**

Laborers in most localities are still paid in coppers, and the daily necessities they buy are also priced in coppers. There is a close relation between these two in terms of that currency. If the wages are converted into dollar equivalents, even at the rate of exchange then prevailing in that locality, they may produce a wrong impression on the statistician who lives in another part of the country, and does not know the living conditions of the first locality. For instance, 25 cents a day is apparently a very low wage, but



in that particular locality, silver dollars may be so rare that 25 cents really mean 180 or more coppers, and the prices of daily necessities being very low in terms of coppers, the wages might actually yield quite a surplus to the laborer. In other words, the real income in terms of food, clothing, etc., may not be so low as indicated by the wages in dollar equivalents. Coppers are sometimes better indicators of the real income than are other forms of currency.

In financial statistics the greatest trouble lies in the conversion of foreign currencies. All foreign loans to China (except a very few contracted during the earliest periods or for some special purposes) are made in the currencies of the creditor countries or those that underwrite them. Hence some are in pounds sterling, some in francs, while others are in United States dollars, Japanese yen, German marks, Russian rubles, Dutch florins, etc., etc. It is difficult enough to reduce these to a common gold basis, as the cross rates between the countries fluctuate, and the rapid depreciation of marks, francs and rubles further complicates all calculations.<sup>p</sup> But there are also many internal loans in silver dollars and Shanghai, Hankow, Tientsin and Haikwan taels which must be included to arrive at China's total indebtedness.

The most natural thing would be to convert all currencies into silver dollars, yet to do so may introduce such inaccuracies that the result becomes meaningless. For instance, the foreign loans of China secured on the customs and salt revenues, outstanding on October 1, 1922, as compiled by this Bureau at that time, were converted into pounds and francs; namely, £120,694,032 and Fr. 157,292,558. At that time the rates of conversion adopted by the Ministry of Finance were £1 at \$8.00 and Fr. 1

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p. Referred to conditions in 1924, when the article was written.

at \$0.165 and the total in silver dollars was \$991,565,529. In one year, these loans were amortised to the extent of £4-068,723, Fr. 42,805,552, U. S. \$1,329,785, and Florins 76,425, according to the fixed schedules, and no additional loans were made meanwhile on the same securities. The total in October, 1923, should naturally be smaller than in 1922, but the average sterling exchange rose in 1923 to \$8.60, while the franc dropped to 11 cents. On account of these changes, the total in silver dollars, instead of becoming smaller, rose on the contrary to approximately \$1,013,051,000.

It is practically useless to calculate accurately sums below thousands of dollars, or even hundreds of thousands, when they are in foreign currencies. The average sterling exchange rate in 1923 was 60 cents higher than in 1922, but the highest in that year was more than 10 per cent higher. A rise of 10 per cent in the exchange affects the total by something more than \$100,000,000! Such totals have in fact very little meaning. They do not represent the indebtedness of the nation, because so far as the foreign loans are concerned, China is not required to pay back so many dollars. She may pay more when the exchange rates are unfavorable and less when favorable. The difference between these silver dollar totals in different years does not indicate the amounts paid in amortisation, as the figures in the last paragraph show. Hence, all loan statistics must be presented in the various currencies in which the loans are to be paid, and no totals can very well be given in any one currency.

#### **Nomenclature.**

Not only weights and measures and currency in China need standardisation for statistical purposes, but also the

names of commodities. Various commodities may be known by one name, and one commodity may have several names. For instance, zinc formerly had no proper name, and was called by the same name as lead. Now, it is known as *sin* (銚), from the sound of the foreign name. Green jade is *tsui* (翠), but a kind of shiny, brittle, green substance taken from the feathers of a bird and formerly often used by ladies for decoration is also called *tsui*. Sesamum is *tsa-ma* (芝蔴), but the Japanese call it *hu-ma* (胡麻), and Chinese students of the Japanese language often adopt this form. When production statistics are collected by Japanese or Chinese students of Japanese, the term *hu-ma* usually stands for sesamum, although in the Chinese language *hu-ma* represents linseed. The Japanese call linseed *ya-ma* (亞麻), which is now also used in some Chinese reports. This is one of many instances where confusion is caused by the use of both Chinese and Japanese names of one article.

As to local differences, Indian corn is an interesting example. Its standard name is *yu-shu-chu* (玉蜀黍), but in Peking it is generally known as *lao-yu-mi* (老玉米), in Shanghai *tseng-tsu-mi* (珍珠米), and in Szechwan *pao-ku* (包穀). Unless one knows all the different local names of commodities, statistical returns cannot be intelligently interpreted. Chinese cabbage is known in Peking as *pai-chai* (白菜) or "white vegetable," but in Kiangsu *pai-chai* stands for a kind of green vegetable like lettuce, while the name *huang-ya-chai* (黃芽菜) is assigned to Chinese cabbage. The situation is much worse in regard to manufactured articles. For instance, shirtings are officially known as *shih-pu* (市布), but the merchants of many localities do not use that name. The Bureau of Economic Information once tried to collect the market quotations of certain classes of imported piece goods in different locali-

ties, and it came across many obstacles of this nature, making it almost necessary to send samples of the goods to its investigators before the market prices could be ascertained.

Geographical names are another source of confusion to the statistician. Almost all cities of China have two names, one in use under the Manchu dynasty and one under the Republic. Some have had their names changed more than once under the Republic. Tsinan is the old name of the provincial capital of Shantung; its new name is Licheng (歷城). The capital of Shansi was formerly called Taiyuan, but now it is known as Yangchu (陽曲). In the same way, Foochow has become Minghou (閩侯); Mukden, Shenyang (瀋陽); Paotingfu, Tsingyuan (清苑); Jehol, Chengte (承德); Kalgan, Changpei (張北); Suiyuan, Kweisui (歸綏), Sianfu, Changan (長安); Anking, Hwaining (懷寧); Yunnanfu, Kunming (昆明); Hankow, Siakow (夏口); Canton, Panyu (番禺); etc.

In some provinces there are two localities bearing the same name, formerly distinguished by the suffixes *fu* (府) and *hsien* (縣). Now, as all *fu* or prefectures have been abolished, and every district is a *hsien*, it becomes necessary to ascertain which place is meant when such a name is mentioned. For instance, if certain products are reported to have originated from Taiyuan, Shansi, it is necessary to know whether the informant refers to Taiyuanfu (now known as Yangchu) or Taiyuanhsien (now called merely Taiyuan). Similarly, if Wuchang, Hupeh, is mentioned, distinction must be made between Wuchangfu (capital of Hupeh, now still known as Wuchang) and Wuchanghsien (now known as Ocheng 鄂城). Some informants are fond of using historical names of places, and refer to Nanking as Paisia (白下), Shihtou (石頭), Kinlin (金陵), etc.,—in fact,

anything except the official name of Kiangning (江寧) or the popular one of Nanking (南京).

#### Quality and Grade.

There is even less standardisation of quality and grade of commodities. The Ministry of Agriculture and Commerce once obtained the assistance of the General Chambers of Commerce of the leading cities in compiling commodity price reports for the years 1921 and 1922, but the results are not satisfactory to the Ministry itself, because the prices are quoted for commodities of quite different qualities and grades.<sup>4</sup> It is true, the Ministry specified high and low grades for each commodity, but what is known as high grade in one city may be medium or low grade in another. For instance, Shanghai has better rice than most other cities in the country, and what is known as high grade there is almost incomparable with any grade elsewhere. Similarly, the grade of silk considered as medium in Hangchow would probably rank as the highest grade in Kansu or Sinkiang.

Moreover, there is sometimes a conflict between the old Chinese and the modern standards of grading. Silk textiles are considered of the best quality, according to the old standard, when they are heavy and strong, but those that sell highest in Western countries are thin and filmy, and they are now also commanding high prices in China. The grading of certain kinds of furs has been affected by foreign demand. Unless the variety and quality of the commodity are clearly stated, a general designation like "high grade silk" or "high grade fur" is sometimes misleading.

Factories seldom give accurate production figures. Often the full producing capacity of the plant is given

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4. 農商部全國物價統計表

instead of the actual quantity produced. Sometimes a small mill with a few thousand dollars capital gives a production figure twice that of a large mill with ten times its capital. Of course capital alone is no indication of producing capacity, yet very wide discrepancies like these make the figures doubtful. All factories are supposed to register at the Ministry of Agriculture and Commerce, but many do not. However, the recent enforcement of the registration laws in connection with trade mark protection will help very much in compiling factory statistics.

Many other inaccuracies and difficulties are met with in all kinds of statistical studies. Carelessness on the part of the informant or collector is responsible for some of them, and lack of understanding for the rest. Besides, the Chinese people are devotees to the *laissez-faire* doctrine, and generally resent inquiries into what they consider as their private affairs. It will take a long time before they will appreciate the value of publicity through statistics, and much longer, that of statistics itself.

## IV.

### The Likin System and Its Effects on Industries and Finance.

Too much cannot be said of the hindrance offered by the *likin* system to China's industrial development. Introduced during the Taiping Rebellion, when it was first applied to Hsien-lu-cheng (仙女鎮) (near Yangchow) by a military officer, Lui I-hsien (雷以誠) (in 1853),<sup>1</sup> as a temporary measure to be abolished as soon as peace should be restored, the system has, contrary to the original intention, remained till this day, and has become so deep-rooted that its abolition is attended by the greatest difficulty. Besides, the amount of revenue collected from this source is so large that it cannot be abolished without incurring heavy financial loss to the Government. The following figures will give some idea as to the amounts collected from year to year, as far as such figures can be obtained :<sup>2</sup>

1912	\$36,584,005
1913	\$36,882,877
1914	\$34,186,047
1916	\$40,290,084
1919	\$39,251,522

"An old tax is a good tax." That is a general principle governing all kinds of taxation. If, in addition to that consideration, the tax in question is also very productive, why, then, should its abolition be contemplated? The

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1. Ta Ching Hui Tien 大清會典事例卷二百四十一
  2. Chinese National Budgets and 全國軍事財政計畫書

answer to this cannot be given in a few words. Superficially speaking, the *likin* system constitutes so many tariff barriers inside the country that goods cannot be transported freely from place to place. So far it is quite true. But what about the native customs houses which, too, limit the movement of goods in the country? And how far, in fact, does the existence of *likin* interfere with China's domestic trade?

#### More Than Seven Hundred Barriers.

The amount of interference may to some extent be indicated by the number of *likin* barriers. There are altogether 790 *likin* collectorates and probably more than 5,300 sub-collectorates<sup>3</sup> in the country, which are distributed as follows :

Chihli	20	Chekiang	41 (187) <sup>3</sup>
Metropolitan District	1	Hunan	31
Fengtien	31	Szechwan	22
Heilungkiang	36 (234) <sup>3</sup>	Fukien	28
Kansu	42	Kwangtung	51
Sinkiang	14 (98) <sup>3</sup>	Kwangsi	30
Shansi	42	Yunnan	44
Shantung	12 (13) <sup>3</sup>	Kweichow	40
Shensi	36 (154) <sup>3</sup>	Kirin	45
Honan	33	Kiangsi	52
Kiangsu	44 (51) <sup>3</sup>	Hupeh	26 (200) <sup>3</sup>
Anhwei	37	Jehol	13 (77) <sup>3</sup>
Suiyuan	9	Tsinpu	
		Railway	1 (52) <sup>3</sup>
Chahar	9		
Total of collectorates			790

Such a large number of barriers must cause unusual inconvenience to the merchants, yet, this fact alone would not have produced so much effect on trade were there no other circumstances which make these barriers more impassable and more vexatious than they would otherwise be.

<sup>3</sup> For the nine cases where the number of sub-collectorates is known, as given in brackets, the average ratio is 6.8 sub-collectorates to every collectorate.



An has been pointed out in the opening paragraph, the system was first inaugurated at Hsien-lu-cheng, and later adopted by other localities on their own initiative and to meet their own needs. Though in all cases sanction was always obtained from the Central Government before the tax was actually collected, the latter did not until recently provide any set of uniform regulations applying to all cases, and the local officials enjoyed much freedom in choosing the articles to be taxed, and the way and rate of taxing for each kind of article. This gave rise to the diversity in the system which has not been much improved after many attempts at unification have been made by the Central and the provincial governments.<sup>4</sup> The various names applied to this kind of tax in different localities are sufficient to show how little uniformity there is in the system. *Likin* (厘金), *tung-chuan* (統捐), *tsan-hsiao-sui* (產銷稅), *lo-ti-chuan* (落地捐), *jen-chuan* (認捐), *pao-chuan* (包捐), *hsiang-chuan* (餉捐), *shan-hai-sui* (山海稅)—these are some of the names designating the different varieties of the tax known to us in general as *likin*. A study of these terms will help us to understand the nature of this grievous system of taxation.

#### Likin or Percentage Tax.

“*Li*” in Chinese means a percentage, because the word was originally used to signify the hundredth part of a cash (or an inch). *Likin* therefore means a percentage tax. When first introduced in Kiangsu, Hupeh and Hunan the rate was one per cent. This precedent was not closely followed in the other localities where the tax was introduced, and at present, after many increases, the rates vary

4. 民國財政史六四九頁，又租稅論三九八頁。(Financial History of the Chinese Republic, p. 649 and Taxation in China, p. 398)

from one to ten per cent. *Tungchuan* means a blanket tax, and it is so-called because before its adoption there had been many taxes and many rates of taxation in the locality for different kinds of goods. The change from *likin* to *tungchuan* already constitutes a step forward towards unification, yet as *tungchuan* itself is different in different provinces, the progress is not so significant. At present this tax has been adopted in Kiangsi, Chihli, Shansi, Honan, Shensi, Kansu, Chekiang, Kwangsi, Szechwan, Fengtien and Sinkiang, the first named province being the first to adopt the tax.<sup>5</sup>

Between *tungchuan* which provides for one levy at the first collectorate, from whence the goods are transported tax-free to other parts of the province, and the *likin* which provides for as many levies as there are collectorates, the *tsan-hsiao-sui* comes in as an intermediate form of tax. It provides for two levies, one at the place where the goods are transported, and the other where they are offered to the market. This double tax is necessary as some of the shipments may originate in other provinces, and the goods so shipped would therefore not be touched by such a tax as *tungchuan*. Of course where the goods are neither produced nor marketed in the province, but merely shipped through it, even the *tsan-hsiao-sui* would not affect them. This tax is also an improvement over the original *likin*, and it is now adopted in place of the latter in Kirin, Heilungkiang and the southern part of Kiangsu.

#### A Confusion of Nomenclature.

*Lo-ti-chuan*, *jen-chuan* and *pao-chuan* are three other varieties of *likin*, which may coexist with the former three

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5. 財政善後委員會報告 (Report of Financial Rehabilitation Commission).

forms already mentioned. When imported goods are separated from the transit passes issued by the maritime customs, an additional tax levied on them at their destination is called *lo-ti-chuan*. To avoid the trouble of investigation and examination, the *likin* collectorate may accept a lump sum from an association of producers or shippers as equivalent to the revenue that might be collected during the year under other arrangements, and this is known as *jen-chuan*. When, instead of the producers or shippers themselves, some outsiders should make the arrangement with the collectorate, it is then known as *pao-chuan*. These methods of collection resemble the system once employed by the old salt gabelle administration. In certain localities *likin* is known under the name of *hsiang-chuan* or *shan-hai-sui*, the former meaning an assessment for military purposes, and the latter a levy on the products of "the mountains and the sea."

In addition to these, many other names,—for instance, the seven-four *li-chuan* (=1 1/10%), the nine *li-chuan* (=9/10%)—are also used elsewhere.<sup>6</sup> These, like *hsiang-chuan* and *shan-hai-sui*, though they serve further to complicate the nomenclature, do not in the least mitigate the onerous nature of the tax. Similarly, *jen-chuan* and *pao-chuan* are only improvements over *likin* in that they save the cost of collection, but they give too much power to private merchants who undertake to pay the lump sum, which power they are apt to abuse for their own benefit. The only real improvements are, perhaps, to be found in the *tsan-hsiao-sui* and *tung-chuan*, which, if properly administered, will eliminate to a great extent the grievous hindrances offered by the *likin* barriers. At present, how-

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6. 各省財政說明書 (Report on Financial Conditions of the Provinces.)

ever, they fall far short of general expectation, chiefly on account of corruption in the administrative system.

#### No Uniformity in System.

From the above outline it is plain that there is no uniformity in the *likin* system. In fact, not only different districts have different ways of taxation, but often-times many different ways are being employed in the same district and many kinds of *likin* collectorates may exist side by side in the same locality. At Shanghai, for instance, there were once a *ho-chuan-chu* (貨捐局), or collectorate for taxing goods in general, a special collectorate for timber, another for sugar, and still another for piece goods. These had each its own staff, its own way of taxation, and its own system of examination. In the north-western part of Kiangsu, known as the *Ning* district (甯屬) (in contradistinction to the *Su* district (蘇屬), which comprises the southeastern part of the province), there were eight different varieties of *likin* to be collected in accordance with some one or other of five prevailing schedules. In the *Su* district, *likin*, *tsan-ti-chuan*, *hsiao-chang-sui*, (these two taxes, when combined, become *tsan-hsiao-sui*), *lo-ti-chuan* and *chu-kou-chuan* were levied at the same time, and under these five heads there were as many as 19 minor divisions. All these diversities existed in one single province, and from this one case alone we can see how little uniformity is to be found in the *likin* system.<sup>7</sup>

#### The Tax in Kiangsu.

It will be profitable for us to go a little more into the conditions that obtained in the province of Kiangsu, in order to understand better the nature of the tax. Being extremely irregular and complicated, the *likin* system cannot be very

well studied on general principles. An examination of concrete cases will go far to make the reader appreciate the complicated situation, and for that purpose we shall take up the provinces of Kiangsu—where the *likin* system was first inaugurated, and Kiangsi—the originator of the *tungchuan* system. The history of these systems will also be studied to provide a better background for the discussion to be made later.

In the table on page 130 Kiangsu is shown to have 44 *likin* collectorates, and 511 sub-collectorates. These were divided into two classes; namely, water and land. Being well supplied with rivers and canals, the *Su* district (i.e. the southeastern part of Kiangsu) found it necessary to have more collectorates and agencies along the waterways than along the highways. The rate of taxation for the former varied among different collectorates, but the general average was around 5%.<sup>8</sup> At this rate a shipment of goods passing through 4 *likin* barriers—which is not a very large number, considering the close proximity of these barriers to one another—would have to increase the selling price by 20%. Between Shanghai and Chinkiang, a distance which can now be traversed in four or five hours by railway, there were as many as seven such barriers,<sup>9</sup> and the addition to the price of Chinkiang products selling at Shanghai, or vice versa, was therefore about 35% of the original. It is quite plain that not many products could bear such a tax burden. Although in many cases the rate was based on prices prevailing many years ago, and, calculated on the basis of later enhanced values, the burden might not have been as great as it appeared, the effect on trade must have been very harmful.

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7, 8, 9. 江蘇省財政說明書

### Railways as Promoters of Reform.

This state of affairs was later improved when the Shanghai-Nanking Railway was built, which improvement affected more the collecting system along the highways than that along the waterways. In fact, railways have always been promoters of reform in China. Instead of spending many days on a Chinese junk sailing up the Soochow creek and submitting their goods to seven examinations and paying seven taxes under as many different kinds of rates, many traders going from Shanghai to Chinkiang could now take the train and pay a uniform tax of  $1\frac{1}{2}\%$  for each section of the railway over which their goods were transported. The whole line was divided into nine sections for this purpose, and the total tax burden on goods shipped from Shanghai to Nanking was only  $13\frac{1}{2}\%$ .<sup>10</sup>

Since the establishment of the Republic, a further reduction has been made in the rate of the tax and a uniform system adopted with regard to shipments over either land or water. The division of the railway into nine sections has also been abolished; instead of these a blanket tax of 2% is levied on all goods, no matter over what distance they are to be transported. Half of this tax is to be paid at the place of origin, and the other half at the destination. Where the shipment originates in other provinces, the first half is levied at the first collectorate at which the shipment enters the boundaries of the province; and where the destination is beyond these boundaries, the second half is levied at the last collectorate at which it goes out of the province. In case the goods are on transit through the province, the tax will be collected at the two boundary line collectorates where they pass into and out of

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10. 江蘇省財政說明書

Kiangsu, or rather the *Su* district.<sup>11</sup> In the *Ning* district, which forms the other half of the province, no such uniform system exists, but the onerous *likin* still holds sway.

#### The Origin of Tungchuan.

In Kiangsi province *likin* was first introduced in 1855, when a few collectorates were established by way of experiment. In the next year, a central office was organized for the whole province, and the rate was fixed at 2% for all collectorates. Each collectorate had to make one levy at that rate, and goods were taxed at every point they passed. Later it was decided that only two levies should be made—one of 3% at the first collectorate, and another of 2% at the second. After passing the second collectorate, the goods were only subjected to examination, but not imposition. In 1860, on account of shortage of funds, this was again superseded by the "twice two-levy" method, with an imposition, besides the 5% collected at the first two barriers, of a similar amount to be levied at the third and fourth collectorates.<sup>12</sup>

After the Boxer troubles of 1900, Kiangsi had to bear a great financial burden in the form of a share of the service of the indemnity, which share amounted to Tls. 1,400,000 every year. To meet this allotment, the province found it necessary to reform its *likin* system. The separate-levies method took four times to collect the whole tax, and it was easy for the trader to evade part of it if any of the four collectorates failed to catch him. Even if he were found out at the next collectorate, he might still evade the third one. To avoid such a contingency, the four levies were combined into one, to be imposed at the first collectorate, at the rate of 10%. If the trader succeeded in evading the first one, he

11. 民國財政史六三三頁

12. 江西省財政說明書

could not possibly evade every one of the collectorates through which his goods had to pass, and whenever he was caught, he had to pay the total amount of tax plus fines. At the same time, the responsibility of collection being concentrated on one collectorate for any shipment of goods, it became also harder for the collectors to misrepresent the amount of the tax revenue. In this way *tungchuan*—for this is the name of the new system—is a decided improvement over the old method of *likin* taxation.

**From 3 to 25%.**

The rate of 10% was too heavy in certain cases, and a further change was made later. The total amount was still levied when the goods were to be shipped beyond four collectorates. If only shipped beyond two collectorates, or if the place of origin was near the boundary line and the goods were shipped to other provinces, the tax was reduced to 5%, or half of the total amount. To avoid misrepresentation by traders with regard to their destination, goods which had paid the 5% tax and which were later found to pass a third collectorate in the province had to pay the other 5% at this collectorate. Miscellaneous shipments not passing beyond even two collectorates were required to pay only 3%.<sup>13</sup>

When *tungchuan* was first introduced in Kiangsi it was applied only to a few important articles; for instance, the timber produced along the Chi-kan and Fu-chien rivers, the grass cloth of Yuanchow (袁州), Chienchang (建昌) and other localities, the native dyes of Loping (樂平), Yukan (餘干) and Pengtse (彭澤), the china-ware of Kingtehchen (景德鎮), the dry beet of Hsiufeng, the imported tobacco leaves from Fukien, and hemp and flax from other provinces.

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13. 民國財政史, 六三六頁



Of these the timber tax is most worth studying. At first a *tungchuan* of 10% was levied at the collectorates among the mountains where the timber was produced. When it was transported by water to Sanhu (三湖), an additional 5% was levied by a special collectorate there. Near the mouth of the Kan River, at a place called Wuchen (武城), another 10% was imposed on timber to be shipped out of the province, thus making the total tax 25%. In 1904, when preparations were being made for levying a new *hsiao-chang* tax, the *tungchuan* was reduced to 8% at Wuchen, and 12% at Sanhu, with all collectorates among the mountains abolished. Further changes only affected the proportion of the tax to be levied at each collectorate, but did not affect the total figure of 20% on all timber going beyond Wuchen. In the case of other kinds of goods, the rate varied between wide ranges. Kiangsi, therefore, has not yet adopted a uniform rate for its *likin* tax, like the 2% system in the southern part of Kiangsu, although it is the place where the *tungchuan* system was first introduced.<sup>14</sup>

#### Chief Defects of System.

We shall now summarize the chief defects of the system, point out their causes and their effects, and relate some of the measures of reform that have been considered by the Government. At the same time, we shall also venture to propose certain remedies of our own which will remove this obstacle to industrial development without adversely affecting the amount of the public revenue.

The first and greatest defect, no doubt, is the lack of uniformity of the system. Different provinces—in fact, different districts—employ different methods of collecting

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14. 江西省財政說明書

the tax, which give rise to such names as *tungchuan*, *tsan-hsiao-sui*, *likin*, etc. Even where the method of collection is the same, the rate of the tax may again differ: in some cases, different parts of the same province or district have different rates; in others, different rates are maintained at the same city for different kinds of goods. The following summary of the average rates employed in the different provinces since 1915—some of which have been maintained till this day—will give a general idea of the diversity in this system of taxation.

#### System and Rates in Different Provinces.

Province	System	Rates in 1915 <sup>15</sup>	Average Rate in 1924 <sup>16</sup>
Chihli	Tungchuan	(1.25% at Tientsin 1% at Ta-shih and Kao-huang	2.5%
Fengtien	ibid	2% for goods in general 1% for grain	
Kirin	Tsan-hsiao-sui	3% for beans 2% Goods on transit exempt from tax	
Heilungkiang	ibid	5%	2% 5%
Kansu	Tungchuan and Lo-ti-chuan	Tungchuan 5%. Lo-ti-chuan 2½%	5% 2½%
Sinkiang Shansi	Tungchuan Tungchuan and Lo-ti-chuan	3% Tungchuan 2% Lotichuan 1%	5%
Shensi Shantung	Tungchuan Likin and Lo-ti-chuan	5% - 6% Likin about 2% Lotichuan at Tehsien and Tsinan	5%
Honan Kiangsu, Ning district	Tungchuan Howusui Jenchuan Lo-ti-chuan	1.25% About 1% plus Chu-kiang-chuan 2½%	2.5% 15.2%

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Province	System	Rates in 1915	Average Rate in 1924
Kiangsu, Su district	Tungchuan (2 levies)	2%	
Anhwei	Tungchuan Likin Lo-ti-chuan Pao-chuan	2%	2%
Kiangsi	Tungchuan	3 to 25%	10%
Hupeh	Transit Likin Hsiao-chang-sui Lo-ti-chuan	2% 5% 2 to 4%	3%
Chekiang	Tungchuan Lo-ti-chuan	About 5% 2½%	5%
Hunan	Likin (one or two levies) Lo-ti-chuan	1½% - 3%	2%
Szechwan	Tungchuan (one levy)	5%	25%
Fukien	Likin	10% (4 levies)	2-3%
Kwangtung	Likin	2% for interiors. 1-1.6% along the coast	2%
Kwangsi	Tungchuan	2½ - 5% at Wuchow and Hohsien; 3½ - 5% for grain; 5% for general goods at other localities with exceptions	5%
Yunnan	Likin (2 kinds)	5%	5%
Kweichow	Likin		5-7.5%
Metropolitan District	Railway likin		2.5%
Jehol	Howusui Chu-tsan-sui Lo-ti-chuan Kohusui		1-4%
Tsing Pu Railway	Railway likin		5%

### Sugar A Luxury; Silk a Necessary.

Of course it is not necessarily a sound financial principle that the rate of taxation should be uniform for all kinds of goods. In fact, it is generally considered proper to tax luxuries more heavily than necessities. But under the *likin* system the difference in rates is not made in conformity with such considerations. One example will illustrate this point. In the *Su* district of Kiangsu, before the blanket 2% tax was adopted, the schedule for certain articles was as follows.<sup>17</sup>

Article	Quantity	Value	Tax	Percentage
Sugar	per picul	10,000 cash	300 cash	3%
Silk (Huchow Tsousha)	per catty	22,000 ..	320 ..	1½%
Ham	per leg	3,000 ..	150 ..	5%

Thus ham bore the heaviest rate, sugar next, and silk the lightest. This makes it appear as if silk were a daily necessary and ham and sugar were luxuries, which distinction does not sound very reasonable. As to the difference in rates and methods of taxation among different provinces and districts, there is much less to be said in its favor.

The effect of such diversities is to make the traders feel uncertain about the burden they have to bear, which tends to discourage them from venturing into new markets, as it may involve new systems and rates of imposition with which they are unfamiliar. At the same time it gives the tax collectors much freedom to temper with the imposition. The merchants cannot keep track of the many different rates and modifications of rates that are being made from

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time to time, and they often have to submit themselves to whatever imposition the tax collectors may devise. This is especially true when they go into any new field of business. In fact, in many districts there are no fixed schedules for levying the tax, and the tax-collectors' words become law. Such circumstances are to a great extent answerable for the corruption that exists under the system.

#### **Half of Revenue Goes to Collectors.**

This leads us to a consideration of the second defect of the system. There is more "squeezing" in the *likin* system than, perhaps, in any other kind of tax administration, so that the post of chief of a *likin* collectorate is considered as a "very fat job", worth several tens, or even hundreds, of thousands of dollars a year. This is known to be so in a few cases, and there is no guarantee that it may not be so everywhere. Of course at certain collectorates the total amount of revenue collected every year is in itself small, and "squeezes", even when they do exist, may not amount to very much. For such matters, naturally, no general estimate can be made that will apply to the whole system. Nevertheless, the general opinion is that the sum total of the "squeezes" of all the collectorates approximates \$40,000,000, or about as much as the total annual revenue received by the Government from this source. In other words, the tax collectors share the revenue half and half with the Government, and sometimes they may receive more than that proportion.

Before the Ministry of Finance promulgated the set of regulations governing the collection of the *likin* revenue in 1914,<sup>18</sup> very large "squeezes" were not at all unusual.

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18. 民國財政史六五〇頁

Sometimes the collectorates received bribes from the traders and exempted them from a part or the whole of the tax they ought to have paid. At other times they might make the traders pay more than the proper amount of the tax, under all kinds of pretexts, and these "extras" were pocketed by the collectors themselves. And, finally, even when the traders paid exactly what they should pay, the sum would not all go to the Government. Some part of it was often retained by the collecting officers, and the revenue was represented at less than what it really was. All these have been to some extent remedied by the regulation above referred to, which we shall consider in greater detail in a later connection.

#### **Funeral Processions and Smugglers.**

Such is the corruption for which the collectorates themselves are responsible. There are other practices which are initiated by the traders, and which the collectorates try to stop with little success. The general principle of the *likin* system—its modification into *tsan-ti-sui* and *hsiao-chang-sui* notwithstanding—is to tax goods on transit. Sometimes the tax is levied at the stores where the goods are sold, and is known as "*meng-li*" (門厘) or "*likin* levied at the door". But on the whole it is applicable to goods while they are being transported. This makes evasion easy, and in spite of the numerous collectorates and agencies scattered all over the country, there are always subterfuges by which the traders circumvent them.

The goods are often misrepresented. Heavily taxed goods may be represented as goods for which the tax is light. For instance, wine has often been transported in oil kegs, and cases of opium are sandwiched in blocks of wood or metal. In fact, the tax on opium being so high, the drug

has been smuggled in all kinds of inconceivable ways. Coffins often serve as a camouflage for conveying this commodity. When the trade was at its height, there was an interesting story which told how a collector was hoodwinked by the opium traders when two funeral processions passed by his collectorate. He opened the real coffin and let the false one, filled to the brim with the drug, pass without examination.

It cannot be contended that other taxes are entirely free from such corrupt practices, but the *likin* system certainly makes these practices easy in view of its usual methods of collection. The effect of such corruption not only affects the amount of the public revenue, but also hinders the development of legitimate commerce and industries while encouraging illicit trade. The lack of uniformity in the system has greater effect on trade than on public finance, while the third defect—one which we shall immediately discuss—is chiefly a defect from a financial point of view.

#### Ad Valorem vs. Specific Tax.

Taxes on goods may be either *ad valorem* or specific. *Likin*, being a "percentage tax," was originally meant to be *ad valorem*. Yet, the tax schedules in most provinces are really made on a specific basis. So much is to be levied on a picul of grain, a head of cattle, or a pair of shoes. This of course makes it easier to calculate the tax, and no declaration of value will be needed of the taxpayer. However, the value of goods is always going up, and during the many years since the promulgation of these schedules, prices have perhaps more than doubled or trebled what they were before. This means that not only the rates of *likin* need modification for the sake of

uniformity, but the basis on which the rates are calculated should also be changed to approximate the prices now prevailing.

In most provinces, the practice is to tax goods that are listed in their schedules at the scheduled rates, while goods that are not so listed are to be taxed on an *ad valorem* basis. These unlisted goods are therefore taxed on the basis of their present values, which are naturally much higher than those fixed for the listed goods. In this way, new industries are handicapped by heavier rates. But this is not so important as compared with the financial loss to the Government. It is quite true that the existing rates based on former values of goods may be already too high in many cases, yet in many others they may be also too low. At any rate, like the specific duties of the customs tariff, the basis of the *likin* tax needs revision. A revised schedule, with proper valuation and lower and more uniform rates, will increase the amount of revenue that may be collected from this source, while at the same time it will make for just treatment of all kinds of legitimate trade.

These, therefore, are the three great defects of the *likin* system. We shall now discuss its reform and the remedies that should be adopted.

#### **Proposed Reforms.**

Many reforms in the *likin* system have been proposed by the Government, and some of them have already been carried out. The limitation of the number of *likin* levies, the combination of many impositions into one under the name of *tung-chuan*, the revision of *likin* rates with a view to greater uniformity, the amalgamation of collectorates resulting in greater concentration of power as well as



responsibility—these and other improvements are what the Central and provincial governments have gradually introduced since the inauguration of the system in its original and most objectionable form. These, however, still leave out certain reforms which are more fundamental, and therefore worth greater consideration.

First among such reforms is the substitution of a modern transit tax for the *likin*, to be collected not directly from the shipper, but indirectly through the carrier—which may be a cart, a boat, or a railway or shipping company. This was proposed in 1913, and a set of regulations was drafted by the Ministry of Finance and adopted by the Cabinet. A trial was first to be made with Chinese owned railways and steamboats, then with those owned or controlled by foreigners, and finally, perhaps, with all kinds of transportation business. The rates were to vary from 2% to 15% of the value of passenger tickets or freight charges, to be levied at the time when such tickets or charges should be paid for. However, on account of the effect which the tax might produce on railway and steamship traffic, especially in view of the inadequate development of modern means of transportation in China, the Government finally decided to postpone its operation till some more favorable time.<sup>19</sup>

#### Railway Likin.

It has been shown that the southeastern part of Kiangsu owes much to the railways in establishing a blanket 2% *likin* tax in the district, so in a similar way the railways elsewhere have also done away with unnecessary *likin* barriers along their lines. Goods transported from Hankow to Peking on the Peking-Hankow Railway, for

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instance, need only pay *likin* twice, at a rate of about 2½% each time, although they travel over 750 miles and across three different provinces, each having a few hundred *likin* collectorates and agencies. Such improvement in the *likin* system is necessary to railway traffic, and a logical sequence is to abolish railway *likin* completely and inaugurate in its place a system of modern transit tax. This, in fact, explains how the original proposal of 1913 was revived under a new guise in 1916.<sup>20</sup>

The Tientsin-Pukow Railway, under instructions of the Ministry of Communications, was to abolish railway *likin* along that line in the fall of 1915, and, to compensate for the loss of revenue to the Government, the Ministry of Finance modified its proposal of 1913, and recommended the collection of a special transit tax on that railway only. There is no logical objection to such a scheme, since it can be so arranged as to impose no greater burden on the traders than the *likin* which it supersedes, but it has not yet been operated on account of practical difficulties.

#### **Likin Abolition and Tariff Increase.**

A second plan of reform is to abolish *likin* without any substitute, securing compensation from an increase in the customs tariff rates as stipulated in our treaties with foreign countries. In the Mackay Treaty of 1902, for instance, it is provided in the preamble and Section 2 of Article VIII that, after the abolition of *likin* and similar taxes, the customs tariff on imports shall be raised to 12½%, (the rate is not stated, but this is what is meant) and that on exports to 7½%. Whether this increase will be sufficient to offset the loss from *likin* abolition is problematical, but the chief stumbling block to this plan is the fact

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20. 民國財政史六四三頁。

that the foreign powers would not consent to any increase in the tariff rates until *likin* is completely abolished, while the Chinese Government cannot afford to lose this important source of revenue before it is sure of an increase of revenue from the maritime customs. Local financial administration has been for some time so much out of control of the Central Government that the latter may not be able to abolish *likin* all over the country in pursuance of any definite arrangement, and failure in a single case may prevent the Chinese Government from realising the compensation provided for by the treaties. This is why such an apparently simple reform is so slow in being carried out.

A third plan is to substitute a production or marketing tax or both for the *likin*. While a transit tax, whether ancient or modern, will prevent the operation of Article VIII of the Mackay Treaty and of similar articles of other treaties, a production or marketing tax will not. This, at least, is the Chinese position with regard to these treaties. It is true that no definite provision like this is to be found in the treaties, and in fact, the preamble of Article VIII of the Mackay Treaty mentions along with *likin* "other dues on goods at the place of production, in transit, and at destination." Yet the exception made in Section 3 of the same article for a tax on goods at the time of marketing, and Article IV of the American Treaty of 1903 allowing for a half tax at the time of shipping, seem to support the Chinese position that the foreign Powers only object to transit taxes, especially when they are collected as under the *likin* system, but will not object to production or marketing taxes, if they do not affect foreign imports or Chinese goods for export.<sup>21</sup> (Many writers translate *hsiao-*

21. MacMurray. *Treaties and Agreements with and Concerning China*, 又民國財政史六五六頁

*chang-sui* into "consumption tax," but as the latter has a better equivalent in *hsiao-fei-sui*, indicating all kinds of imposts on ultimate consumption goods, such as salt gabelle, wine and tobacco taxes, it is better to use the term "marketing tax" for the former. "Destination tax" will be the most appropriate translation for *lo-ti-chuan*).

#### Chinese Attitude Towards The Treaties.

Many other considerations help to support the Chinese position in this matter. The American Treaty, made a year after the Mackay Treaty, is purposely silent on the abolition of other than transit dues. Besides Section 8, which specifically provides for a marketing tax the rate of which is to be decided by China herself, Section 9 of Article VIII of the latter treaty provides also for a production tax on cotton cloth and cotton yarn at double the rate of the import duties. As most other commercial treaties are more or less based on these two, it is quite plain that the Chinese position is not improperly taken, as some writers think.

At present, there is in many provinces a *tsan-hsiao-sui* or "production and marketing tax." It is, however, only so in name, because in fact it is still collected through the *likin* collectorates on goods in transit, and is really a transit tax subject to all the criticisms directed against the *likin* system. A modern production and marketing tax was first proposed in 1904, with a view to the carrying out of the stipulations in the treaties above-mentioned. A conference of delegates from all provinces was held at Shanghai under the supervision of the Commission on Commercial Treaties, but no definite result was reached. The proposal has been more than once brought up again by

the Ministry of Finance under the Republican Government with equally little success.\*\*

Thus the *likin* question still stands where it was before all these reforms were proposed. There is no doubt that any one of the above-mentioned plans, when adopted, will be a great improvement over the existing system, yet their advantages are not exactly the same. The new transit tax cannot be an adequate substitute for *likin* because modern transportation does not yet reach all parts of China, and it would involve great practical difficulties to collect such a tax from the old-fashioned means of transportation. Moreover, it is at best only a temporary measure, which will have to be abolished when all transit taxes are done away with in compliance with the treaty provisions, or in connection with sweeping financial reforms.

#### **Method of Collection Most Important.**

The second and third plans may be considered together, since, according to the Chinese position explained above, they do not conflict with each other. The best policy for the Government will, perhaps, be to adopt a general marketing tax in place of *likin*, as this tax is specifically provided for in the treaties. The experiment may first be made with those provinces which are more under the control of the central financial administration, and when success is demonstrated in these cases, the tax may be gradually extended to other provinces. In fact, all provinces will welcome the reform if it is really beneficial to all parties concerned. When initial success is assured, it may then be time to approach the treaty Powers and

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arrange for an increase in the tariff rate, which can be consummated when *likin* is completely abolished.

At the Special Customs Conference convened in Peking two years ago, declarations were issued by China and the other participating Powers for the simultaneous abolition of *likin* and restoration of tariff autonomy. China proposed to have *likin* abolished by January 1, 1929, and to levy interim surtaxes of 5% on ordinary goods, 20% on luxuries and 30% on wine and tobacco, at the time of importation, to provide funds for *likin* abolition, consolidation of unsecured loans, etc. One foreign delegation suggested the collection of a special *likin* compensation tax by the maritime customs on imports and local manufactures and products now paying excise at the rate of one-third of the import duties, including the variable interim surtaxes. The proceeds of this tax were to be in the custody of a *Likin* Compensation Committee, composed of representatives of (1) the Central Government Administrations collecting the tax, (2) the provincial treasurers and provincial assemblies and (3) the National Association of Chambers of Commerce. The funds were to be lodged in banks to be designated by the Chinese Government at Shanghai. While there was much discussion about *likin* in the Conference, this was one of the most practical plans suggested.

The Nanking Government is in favor of immediate abolition of *likin* in all provinces under its control; namely, Kwangtung, Kwangsi, Kiangsu, Chekiang, Fukien and Anhwei. At the 115th Political Session held on July 18, regulations were promulgated to put this measure into effect by September 1, 1927. Not only ordinary *likin*, but also railway *likin*, parcel post tax, and native customs duties (except those collected along the land frontier) are

to be abolished. The maritime customs shall also stop levying the transit dues, coast trade duties, and export duties on goods destined to Chinese ports. At the same time, the regular import duties on ordinary goods shall be increased to 12½ per cent, and on luxuries to 20, 30 and 60 per cent. This, if carried out, will be the real beginning of the end of this obnoxious tax.

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Note.—This study was made a few years ago, and revised recently. The author did not formerly approve certain forms of *likin*, but his opinion has since changed. He now thinks that *jen-chuan* can possibly be so modified as to constitute a real improvement over *likin*. Cf discussion on page 133.

## International Administration and Financial Control of Chinese Railways.<sup>a</sup>

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This question, which is holding the attention of the public at the present moment, is known under many different names, depending on the point of view from which we look at it. It is called unification, commercialization, internationalization, and—by some—even confiscation, of Chinese railways. Which one it will be depends more upon the practical plan to be carried out than upon the general principle involved in the proposed change of the railway system of our country. If one plan be followed, our railways might be entirely lost to us; if another, they might be completely restored. Under the present system, some of them are under our control, some not, and some only partially. This complicated situation makes it impossible to discuss the question on general principles only, and we shall be entirely unjustified if we support or condemn a plan without first knowing its details.

International administration of Chinese railways is not a new proposal. The question was once brought up three or four years ago during the administration of Yuan Shih-kai, when an English diplomat proposed the appointment of an Englishman as general director of all railways, much in the same way as the post office and maritime

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a. Published in three issues of the Chinese Social and Political Science Review, March and June, 1919 and June, 1920.



customs are administered. This proposal was not accepted, and nothing more was said about it.

When Foreign Minister Lou Tseng-hsiang left Peking for the Paris Peace Conference, the writer of this article submitted to him a detailed proposal for the restoration of conceded railways to China under international administration, and the pooling together of all foreign contracts for projected lines into an international pool, which should begin to build such lines as the Chinese Government desired to construct. The object was to do away with the existing dog-in-the-manger system of railway contracts, under which the contracting companies either could or would not build the lines contracted, nor would they allow others to build them.

At the time of writing, many similar proposals have been put forth with strong support by both foreigners and Chinese. Foreigners of many nationalities are found among the strong supporters of the movement, while among the Chinese, advocates come from more than one political party. In fact, one part of the proposal, viz, the restoration of foreign-owned railways to China under international administration, has received the unanimous support of all Chinese, and may soon be applied to the Chinese Eastern Railway, which has been taken over from Russia. What the advocates do not agree in, and what we want to discuss about, concern the other parts of the proposal; namely, the application of international finance and administration to railways owned by the Government and private companies and railways to be built in the future.

As these things admit of much discussion, widely different and even diametrically opposite opinions have been expressed with regard to them. Discussion began in private circles about the possibility and advisability of such a system as early as last December, but not until the latter

part of January of this year <sup>b</sup> was the attention of the public called to this important question. On January 20th., the Advisory Committee on Foreign Affairs presented a set of proposals to the President to be transmitted to our delegates at the Paris Conference, of which the third proposal of the first group dealt with the question of railway unification. The proposal is reported to be as follows :—

**The Proposal of the Committee on Foreign Affairs.**

It is proposed that all railways which are built or are being built with foreign capital, or with foreign loans as capital, as well as all projected lines for which contract for foreign capital or loan has been signed, be unified under one system; that the foreign capital and foreign loans of such railways be consolidated into one single (international) loan, with all the railways combined as security for it; that foreign railway experts be engaged by the Government to help the Chinese in the management of these railways until the new consolidated loan is fully paid; and that the administration and traffic management of these railways be under the direction of the Ministry of Communications.

In the meantime, according to newspaper reports, there was also much agitation among the foreigners in Peking in favor of railway internationalization. They held a number of meetings at their private residences, and drew up definite plans for the execution of their proposal.

Four of these plans were reported in the Chinese daily paper, *Kung Yen Pao*, three of which were outlined by Mr. J. E. Baker, Adviser of the Ministry of Communications, and one by Mr. S. F. Mayers, Peking representative of the British and Chinese Corporation. The latter has not been

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b. 1919.

published in whole, but only his suggestions about the distribution of foreign managers and department chiefs on the various lines. They are said to be what he would least insist upon, but we reproduce them at the end of this article because they and similar suggestions have a very important bearing on Chinese railway administration. It will be seen from his suggestions that all kinds of railways in China, built or to be built—including the South Manchuria, Peking - Mukden, Peking - Suiyuan and Pukow-Sinyang—are involved in his plan.

Mr. Baker's plans have also been summarized by Mr. Lin Chang-min in his address before the People's Diplomatic Association, and his summary agrees with the *Kung Yen Pao* version in all the principal features. The latter version is considered by Mr. Baker as correct on the whole, although there are misinterpretations of minor details. He further makes the statement that these plans have appeared in the Chinese press without his knowledge, and that they merely represent a private attempt on his part to formulate different points of view from which, he hopes, it might be possible to work out a practicable plan. <sup>c</sup>

Opposition first came from the Chinese Railway Association, which held a joint meeting of its Executive Committee and Advisory Council on the 24th. of January. The question was brought up as one of the topics for discussion and both Mr. Liang Shih-yi and the Vice-President of the Association Mr. Kuan Ken-lin spoke at great length concerning the danger that attends the scheme. Four plans were reported to have been proposed by different people, but no specific statement was made with regard to

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c. His statement was issued through the editor of the Chinese Social and Political Science Review, and appended to the end of my article.

the above official proposal of the Committee on Foreign Affairs. Arguments both for and against the scheme were called for, and Mr. Kuan, who acted as the chairman of the meeting, concluded his speech by expressing his opinion that the scheme might be made use of for the restoration of formerly conceded railways to the Government, an opinion in which Dr. C. C. Wang was said to concur. However, as it is, he was strongly against it, as was also Mr. Liang. The Association later organized a special society for the discussion of the question, to which non-members of the Association were also invited.

As the original proposal of the Committee on Foreign Affairs was transmitted to Minister Lou at Paris without the knowledge of the Minister of Communications, Minister Tsao expressed his strong disapproval of the procedure at the Cabinet meeting. He also brought up seven points against the proposal. His arguments were as follows:—

**Arguments of Minister Tsao Ju-lin against the  
Proposal.**

1. Administration. Railways form the most important part of the system of communications of the country. In fact, they are the arteries of the nation. Foreign administration would imperil the existence of the nation and impair its sovereignty.

2. Railway lines. Railways serve many purposes: for national defense, for communications, and for industrial development. Under foreign administration, only such lines would be built as will develop industries, because the other two kinds will not be profitable undertaking.

3. Transportation. Railways have great influence on native industries and territorial development. Under foreign administration, foreign imports and industries beneficial to

foreigners will be encouraged, while native products will be neglected. The effect of the South Manchurian Railway on the economic conditions of Manchuria is a good example. If all railways be under foreign control, all Chinese industries will finally go into foreign hands.

4. Finance. The total capital of all railways is an enormous sum. If we add to it their daily receipts, it will amount to a large proportion of the nation's money capital. Foreign administrators will naturally deposit this fund in foreign banks, which will greatly affect the nation's finance.

5. Military question. Although China has no intention to engage in any war with foreign countries, transportation of troops for suppression of bandits is often necessary. The Shanghai-Nanking and the Lunghai Railways, because they refuse to be paid on account, have often delayed our military movements. If all railways be under foreign control, the same difficulty will be experienced everywhere.

6. Railway experts. On account of lack of railway experts, we have been compelled to employ foreigners on our railways. But we are free to employ our own men whenever they are found equally competent to do the work. In fact, we may in the future be able to dispense entirely with the service of foreigners, as the Japanese have done. Under foreign administration, on the other hand, first class posts will never be held by Chinese, as they have never been in the Customs and the Post Office Services.

7. Railway materials. When the railways buy their materials separately, we are still free to choose them from any country. Under a unified system, both the materials and their prices will be controlled by foreigners, and we must buy the same kind of material and at the same price. The disadvantage to the railways will be very great.

As a result of the discussion, a second telegram was sent to Minister Lou at Paris instructing him to withhold the proposal if it were not already presented. The reply stated that it had not yet been presented, nor had the question been brought up by any of the foreign delegates at the Conference. On February 18, a special joint meeting of the Cabinet Ministers and members of the Committee on Foreign Affairs was called at Tsun-eu-tsai. Eight men attended the meeting, and they elected Minister Tsao and Mr. Liang Shih-yi to draft a new plan to solve this problem. Many joint meetings were held at the same place after this, until a new proposal was adopted on March 8, which we produce in full below. This last meeting was attended by Premier Chien, Minister Tsao, and Messrs Liang Shih-yi, Lou Chung-yu, Wang Ta-hsieh, Lin Chang-ming, Chow Tze-chi, Wang Chung-hui and Shen Yen-yi. The meeting lasted four hours, but finally a proposal was adopted and immediately communicated to the delegates at Paris.

#### **The New Proposal.**

1. Railways built "with loans which are political in nature," such as the South Manchuria, Chinese Eastern, Yunnan, Shantung, Kirin-Changchun, and Antung-Mukden Railways, to be bought back by the Chinese Government with a "consolidated loan" to be obtained from the foreign banking syndicate.

2. Railways already built with "ordinary" foreign loans, as Peking-Mukden, Shanghai-Nanking, Tientsin-Pukow, etc., to be excluded from consideration.

3. Railways for which foreign loans have been contracted, but which are in process of construction or not yet under construction, to have their loans converted into an international loan, to be advanced by an international banking

syndicate, which shall be organized on the initiative of Chinese capitalists, and the loan contract to be standardized by the Ministry of Communications.

4. Future extensions to be left for the future to decide.

Thus some conclusion was finally reached and the question had a partial solution. The matter is not yet closed to discussion, as this proposal of the Committee is not necessarily the most satisfactory one, and it may or may not be approved by the other powers at the Conference. If not, then some counter-proposal may be brought up, and we must be prepared to face the new situation at any time. For this reason, it is advisable to examine into the different plans that have been proposed, and the opinions of the leading men with regard to this question.

#### **The Plans Outlined.**

Four plans were said to have been proposed, according to the report of Mr. Kuan Ken-lin before the Railway Association already referred to. They were the typical ones, while others with minor variations from them are not worth mentioning.

1. An international commission is to be organized with one member from each of the five following countries; viz, England, United States, France, Japan, and China. The Commission shall pass on all measures which shall be executed by a separate executive committee to be composed entirely of foreigners.

2. A central railway bureau under the control of the Ministry of Communications is to have full power in administering all the railway of the country. Each of the five above mentioned countries shall have a representative in the bureau, to be appointed by the Chinese Government.

3. Chinese railways are to be entirely independent of the Government.

4. Following the example of the Chief Inspectorate of the Salt Administration, the railway administration is to be in charge of a Chinese head, with European and American assistants.

All four plans have one common feature, *i.e.* the administration of all railways will be in the hands of an international body. There is no similarity between any one of these and the proposals of the Committee outlined some paragraphs back. Mr. Baker's plan, as reported in the *Kung Yen Pao* of Peking, and Mr. Mayer's plan, reported by a daily paper of Osaka, are also reproduced and appended to the end of the present article. It will be noticed that the first two plans resemble very much Plans A and B of Mr. Baker respectively. In the following we shall sum up the opinions of the leading personages of the country with regard to the plans.

#### **President Hsu's Opinion.**

In the first place, President Hsu Shih-chang was reported to have said that he was in favor of international investment in Chinese railways, but that the railway lines to be constructed should be designated by the Chinese Government, for instance, the trunk lines of the northwest. Railways now administered by the Government should never be put under foreign control. The President's attitude is therefore very definite and well-defined, and his preference for international investment is not only politic as an official declaration, but also implies a very sound principle which we shall soon discuss.

In a second memorial to the President, the Advisory Committee on Foreign Affairs defended its position with



regard to this question in the following manner. As the document is a very important one, we give here a complete translation of the same, as reported in the papers.

**Memorial of Committee of Foreign Affairs to  
the President.**

On January 20 we of the Committee respectfully submitted to you a set of proposals to be presented at the Paris Peace Conference, and, as we understand, they were approved and transmitted by you to our plenipotentiary Delegates in Europe to be presented in due time. Concerning the third proposal for railway unification, we want here to explain to you our purpose in making the proposal, and the benefits we expect to secure from it for our country.

Although our railways are mostly built with foreign capital, we must distinguish between three different classes; namely, (1) railways built with foreign loans, (2) railways built jointly by Chinese and foreigners, and (3) railways owned entirely by foreigners. The foreign loans contracted by railways of the first class may again be distinguished into three kinds: (1) pure investment loans, (2) "mixed" loans, and (3) "auxiliary" loans. In short, the difference lies in the political or commercial nature of the railway. Commercial railways give rise to no further complication besides the problem of administration. They do not affect territorial jurisdiction or sovereignty of the nation. On the other hand, jointly operated roads bring about the greatest and swiftest changes. They soon become completely controlled by foreign countries, and, in addition, create many new lines built with "auxiliary loans."

The reason is, these railways all have some basis of

operation. The Chinese Eastern Railway of Russia had Port Arthur as its basis. The Shantung Railway of Germany was based on Tsingtau. These countries first secured a solid basis, and then extended their influence along the railways. That was why these railways, though originally supposed to be under joint operation, became entirely controlled by them soon after. England meant to do the same thing with the Canton-Kowloon Railway, with Kowloon as its basis, but as the railway was not jointly operated, but only built with an English loan, it remains to this day in our possession. France planned to construct a railway from Kwangchowwan as a basis, but on account of the weakness of the basis and the delay in fixing the line, it has never been accomplished.

Thus the important development of these railways were all controlled by the policies of these foreign nations. It is fortunate that these nations are far away from China, and have many other things to engage their attention, which has delayed the extension of their influence, and sometimes has even resulted in the loss of their railways. Yet wars have been fought as a result of such contention, for instance, the Russo-Japanese War and the Tsingtau campaign. Should we ever forget such things?

“Auxiliary” loans contracted for railway construction sometimes change their nature and become mixed loans, as is the case with the Tientsin Pukow Railway. Germany intended to extend her influence from Tsinan north to Tientsin and south to Pukow, but on account of opposition by England, the railway was divided into two sections, and the loan became “mixed” in nature. Failing in controlling this railway, Germany gave up her plan, and ceased to demand concessions for building railways from Kaomi to Hsuechow and from Shunteh to Tsinan.

### **Railways and Foreign Influence.**

The southern section of the Chinese Eastern Railway, after changing hands, has now also changed its name to South Manchurian Railway. By this change of name, the change of ownership is made definite. At the same time, Port Arthur has received the new nomenclature of Kwantung, and the streets of Antung and Tsingtau are now called "tings." All these point to one motive and one policy.

In Manchuria the influence extends along the railway lines (built or to be built) of Hsinmin-Mukden, Kirin-Changchun, Antung-Mukden, Shihpingkai-Chenchiatun, Chenchiatun-Taonan, Kaiyuan-Heilungchen, Kirin-Hweining, Changchun-Taonan. Port Arthur is not the only basis, but the lines Antung-Mukden and Kirin-Hweining are connected with lines in Korea, while the line Chinchow-Taonan brings with it a new harbor. Therefore the bases are very strong. In Shantung, the influence will extend along the lines of Kaomi-Hsuchow and Shunteh-Tsinan, while Tsingtau will serve as the basis. Thus, foreign influence reaches Jehol on the north and Shunteh on the south, and Peking lies in the iron grip of that foreign power. How much will it mean to the country needs little explanation.

Besides, Shunteh is on the Peking-Hankow line and Jehol can be easily connected with the Peking-Kalgan railway. Foreign influence will directly extend to Peking and other strategic points of the country, to which resistance is almost hopeless. This is a real danger to the country.

For the above reasons, the Committee are convinced that railways built with foreign loans as capital are allowable, but not those jointly operated or exclusively

controlled by foreigners; and of the first class, the loans should be pure investment loans, but not "mixed" or "auxiliary" loans. The difference lies altogether in the political or commercial nature of the loan or of the railway, and the existence or non-existence of any basis of operation. As to administration, although it has much influence on railway traffic and general economic conditions, and should therefore be carefully prescribed, it depends entirely on the loan. After 20 or 30 years, when the loan is repaid, the railway reverts to China, and no question of territory or sovereignty is involved. On the other hand, if the present system should be allowed to remain in existence, within ten years the whole country would come under foreign influence.

The original proposals of the Committee are divided into five groups, of which the first one aims at abolition of foreign spheres of interest, especially as applied to railways and conceded territories. If we take away its application to these two things, the resolution would be empty talk. According to the report of our Delegates at the Paris Conference, the 22nd. article of the proposed Constitution of a League of Nations provides that members of the League, on accepting the Constitution of the League, shall be considered as having nullified all their former obligations which are incompatible with the provisions laid down in this Constitution. This is a singular opportunity for our country to get out of the dangerous condition we are now in, and we should not let it slip away.

In conclusion, the Committee wishes to repeat that the purpose of making the former proposals is to convert political railways into commercial railways, and railways controlled by individual foreign countries into railways which will be restored to our own country. The life or

death of the nation depends on the success or failure of the proposed scheme?

#### **Criticisms of the Proposal.**

On the other hand, those opposed to the scheme have also very strong arguments. Minister Tsao's seven points have already been given. Messrs Liang Shih-yi and Jeme Tien-yu also disapproved of the scheme, and their opinions we shall reproduce in brief below. Mr. Liang Shih-yi's address before the Railway Association reads thus:—

The internationalization of railways would put our system of communications under the same conditions as our Customs Service. Our tariff rates cannot be changed without the consent of foreign countries, which has much obstructed the development of our native industries. The customs revenue, since the establishment of the Republic, has been deposited by the Chief Inspector in foreign banks, and a large sum of money has thus been put beyond the reach of Chinese business men, resulting in greater impediments to our economic development. No Chinese has ever served as Inspector of Customs, except in the case of Mr. Chang Yin-tang at Yatung, because foreigners cannot go to Tibet. I have been in the Customs Service, and therefore know the conditions well.

If the railways are put under similar conditions, the rates will be determined by foreigners, who will discriminate against Chinese products. Germany did that on the Shantung Railway, and proposed to do the same on the Tientsin-Pukow and the projected Kaomi-Hsuchow and Tsinan-Shunteh Railways, when fortunately the negotiations were broken off by the War. All funds of the railways, under foreign administration, would also be deposited with foreign banks, which would mean a great drain on Chinese

finance. Even the Peking-Mukden Railway, which is entirely a Government railway, was compelled, on account of foreign loans contracted, to refuse to accept paper money for payment. The Lunghai and the projected Tung-chen Railways have already caused us much trouble in our negotiations.

As to the opportunity for Chinese to serve on the railways, it would be entirely lost under the proposed arrangement. All these are fatal to our national existence. The benefit, according to the advocates, to be derived from the proposal is that the spheres of influence would be broken up. But there are no spheres of influence in China. If we want to get back such railways as the Chinese Eastern, South Manchuria, Yunnan, and Shantung Railways by this plan, it is well nigh impossible. The foreign advocates can hardly answer that question themselves. Thinking that China has lately shown her inability to manage the railways, they simply want to usurp the administrative power of the system of communications.

Later, in another connection, Mr. Liang explained that he only opposed the foreigners who proposed the plan, and not the Chinese who tried to utilize the proposal for our benefit. This is quite true, as the second proposal of the Committee on Foreign Affairs, drafted by him and Minister Tsao, embodied the general principle of international finance of Chinese railways, only with restrictions to its application.

#### **Mr. Jeme Tien-yu's Objections.**

Mr. Jeme Tien-yu, the veteran railway engineer of China, sent, on behalf of the Chinese Society of Engineers, a telegram to the Chinese Delegates at Paris in which he

brought up the four following objections to the scheme of railway internationalization.

First, the effect on Chinese engineers. Foreign administrators will naturally employ foreigners in preference to Chinese, which means that the latter will have little chance to occupy responsible positions.

Second, the effect on materials. Railway construction depends a great deal on the design. Even if the foreign administrators be entirely impartial, they will still be inclined to prefer those designs to which they are accustomed. When Mr. Jeme was Chief Engineer of the Peking Kalgan Railway, he constructed most of the bridges with stone and mortar, which are native products. The bridges have proved as strong and durable as any other kind of bridge. Were the construction in the charge of Americans, they would naturally have built steel bridges. The cost of construction constitutes a large part of the capital outlay of railways, and under foreign administration, enormous waste of capital will ensue.

Third, monopoly of railway supplies by foreign firms. Supplies may be purchased by open bidding, but the bidders must follow the specifications of the engineer. When the designs are those of one country, that country—in fact, certain particular firms of that country—will have a virtual monopoly of the business.

Fourth and last, the difficulty of securing unanimous agreement of all countries concerned. This can be illustrated by the case of the Canton-Hankow-Szechuen lines. The delay in their construction is due to the impossibility of unanimous agreement on the part of the four powers to any plan that has been suggested.

In conclusion, Mr. Jeme declared that he would quite agree to any plan for the breaking up of the spheres of

interest, provided it did not result in a greater concentration of foreign influence in the hands of a few. As the plan is more likely to produce a preponderance of power of some one nation (Mr. Jeme did not mean Japan) it is really less desirable than the present situation.

Mr. Lin Chang-min, in a lengthy speech before the People's Diplomatic Association (國民外交協會) on Feb. 23, supported strongly the proposal of the Committee on Foreign Affairs, of which he is a member. His opinion is in its main points similar to what has been expressed in the Memoranda of the Committee, but certain specific points will be referred to in the second half of our article.<sup>d</sup>

#### **The Ta-Seng Banking Syndicate.**

After the first part of this article went to the press, many important developments have taken place which could not be ignored without making our review of the facts very incomplete. Chief among these developments were (1) the organization of the Ta-Seng Banking Syndicate, (2) the introduction in the parliament by Senator Y. S. Ho of a bill opposing railway internationalization, (3) the proposal by the British Chinese Corporation to put Chinese railways under international administration, made to the Paris Peace Conference. In contrast with this is the counterproposal of Mr. Yeh Kung-cho and Dr. C. C. Wang to the Chinese Government which we reproduce in full. As Mr. Yeh and Dr. Wang have been from the very beginning connected with this question, but have not thus far definitely expressed their opinion, it must be very interesting to the readers to read their Paris telegram which contained the proposal, although it was unfortunately very poorly deciphered.

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d. The whole speech was published in a special pamphlet of the Association and in *La Politique de Peking* of March 9 (and a later number).



On March 11 a number of Chinese financiers met at the residence of Mr. Liang Shih-yi. It was Mr. Liang's proposal to organize a Chinese banking syndicate to finance Chinese industries and railways, especially the latter. The proposal was heartily accepted and the total subscription of those present amounted to \$10,550,000. The list in detail is as follows :

Bank of China	...	...	...	...	\$3,000,000
Bank of Communications	...	...	...	...	3,000,000
Exchange Bank	...	...	...	...	2,000,000
King-Chen Bank	...	...	...	...	1,000,000
Salt Industrial Bank	...	...	...	...	500,000
Hsin-Hua Bank	...	...	...	...	300,000
Ta-Seng Bank	...	...	...	...	300,000
Peking Commercial Bank	...	...	...	...	150,000
Chung-Foo Union Bank	...	...	...	...	150,000
Wu-Tsu Bank	...	...	...	...	150,000
Total	...	...	...	...	10,550,000

Besides these there are banks which were not represented at the meeting, but which may later subscribe to the capital. Also banks which have no branches in Peking have not yet been put down on the list. If all these be included, the total may go up to \$15,000,000.

#### Plan of Organization.

At the same time the following tentative plan for the organization of the Syndicate was adopted.

1. The name of the organization shall be Ta-Seng Banking Syndicate.
2. The object of the Syndicate is to finance railways, mines, steamship lines, and factories, with special attention to railways.

3. The total capital shall not exceed \$10,000,000. (Since this amount is already oversubscribed, it is probable that the capital may be increased to \$20,000,000. The subscribers may also relinquish part of their subscription in favor of other banks not yet included.)
4. The Syndicate shall engage exclusively in underwriting Government bonds, and all kinds of public and private loans provided they are not of a political nature.
5. The officers shall consist of a President, an Accountant, and a Secretary.
6. The Board of Directors shall have active control over all businesses of the Syndicate. No fund shall be appropriated without their approval.
7. All transactions of the Syndicate shall be in terms of the English pound.

It was also understood that the capital itself should not be tied up in such investment, but should only be used as advances. For, according to Mr. Liang, most advances on railway loans do not exceed \$600,000 or \$700,000. The capital therefore need to be paid up only to the extent of 25%. Foreign bankers may be invited to cooperate with the Syndicate, in which case an accountant to be jointly recommended by the Syndicate and the foreign bankers to take charge of the accounts of the railways was provided for in the prospectus originally drawn up by Mr. Liang. It stated that the Syndicate might either invite foreign bankers to join it in underwriting, or it might join foreign syndicates that had underwritten Chinese loans.

Many more meetings were held later. More banks have joined and the total subscription, so far as we know, has gone up to \$10,850,000. An organization committee

was formed consisting of one representative from each bank subscribing less than one million dollars and two from those beyond that amount. The Chairman of the Committee is Mr. Liang. A draft committee of three was also appointed to draw up the Articles of Association of the Syndicates.

#### **Mr. Ho's Bill in the Senate.**

On March 14, Mr. Ho Yen-san introduced a bill in the Senate asking the Government to oppose the proposal for railway internationalization. The bill states that the main features of the proposal include the consolidation of all railway construction and administration under an international body, which would really amount to a transference of the rights of possession over all Chinese railways, built and to be built, to that body. The arguments of advocates of the proposal, says the bill, are mainly three in number; namely, the abolition of spheres of interest, the equalization of rates, and quick extension of new lines.

Against these arguments Senator Ho pointed out five objections to the proposal. In the first place, consolidation of the loans will make it impossible for China to "redeem the railways," while in the case of loans from individual countries, as the Peking-Hankow railway loan from Belgium and the Canton-Hankow railway loan from the United States, we were able to pay them back and took possession of the railways.

Secondly, in the building of new lines, country A might desire to send more engineers, country B to sell more materials, and conflict between the different nations would be inevitable. Moreover, each nation would be anxious to build new lines in its sphere of interest and

oppose those to be built in the spheres of other nations. Quick extension of new lines would only be a dream.

Thirdly, equalization of rates might not be altogether desirable. The international body would make the rates profitable to importers and unprofitable to exporters in order to dump foreign products in China.

Fourthly, international administration would interfere with China's military movements. Even though the proposed League of Nations could afford sufficient protection to weaker nations, and China could not expect to make war on foreign countries, such interference would be altogether undesirable, in case, unfortunately, civil war should break out again in the country. Foreign nations would be in a position to give indirect aid to one party or the other.

Fifthly and lastly, depositing of railway funds in foreign banks would amount to international control of our finance.

Thus, our military power, our financial power, as well as our "commercial power", would all be controlled by foreign nations. For these reasons, Senator Ho and the endorsers of his bill asked the Government to cable immediately to our Delegates at Paris to oppose the proposal, and at the same time instruct the Ministry of Communications to adopt fundamental measures for the preservation of our railway rights.

The bill was referred to a special committee of seven, with Mr. Chen Mou-ting as the chairman, appointed by the President of the Senate Mr. Li Shento, and on March 22 the Committee gave its report. The Government, according to the report, had already cabled to Minister Lou at Paris instructing him to withhold the proposal sent him by the Advisory Committee on Foreign Affairs, but as the so-called

proposal of internationalization was tantamount to confiscation by foreign powers, the Senate must express its attitude and try to prevent the foreigners from bringing the matter up again. The motion was passed by a majority of 77 out of 89 senators present.

**The Secret Memorandum of the British Chinese Corporation to the Paris Peace Conference.**

On May 20, a Paris report was published in the Peking papers giving the essence of a memorandum said to have been secretly submitted by the British Chinese Corporation to the Peace Conference authorities. The memorandum states, by way of introduction, that principal repayment on most of Chinese railway loans is soon due, which will cause the Chinese Government greater financial difficulty. The Chinese know that English and American merchants have the intention to help improve the Chinese railways, and think that with their help China may be able to induce Russia, France and Japan to give up the lines owned by them—viz, the South Manchuria, Chinese Eastern, Yunnan, and Shantung railways—when that is possible. The Chinese further hope to convert all former railway loans into a consolidated international loan, and unify the administration of all railways so as to abolish foreign spheres of interest. They are also willing to establish a special bureau, like the Chief Inspectorate of Salt Administration, to control all the lines.

Such a plan, continues the memorandum, will meet with great financial difficulties even when the political obstacles be neglected. It requires £56,500,000 to buy back the lines owned by foreigners, and an additional £32,000,000 to pay all the outstanding loans on other lines. Taken together, £100,000,000 of new bonds must be sold to

pay for them. Of this amount, how much may be exchanged for old bonds and how much should be paid in cash depends entirely on the terms of the bond conversion. If the general principles of the above plan be agreed to by the capitalists of England, United States, France and Japan, the question immediately arises as to the way of controlling and administering these railways. It appears to us that the only satisfactory arrangements to foreign interests is to have an international board of control, for it would be impossible to secure the agreement of different countries to the appointment of any one man to control the Chinese railways. For that purpose we submit the following plan.

#### **The Proposed International Board.**

1. The Chinese Ministry of Communications should give up its power over the railways to the International Board, which should be composed of the Minister and Vice-Minister of Communications, and one representative each from England, United States, France, and Japan. The Minister and Vice-Minister should be at the same time Director-General and Co-Director of the railways. Russian and Belgian interests should for the time being be represented by France.

2. The Board should have its headquarters in Peking and should be responsible to the Chinese Government as well as the foreign financial interests with regard to the proper administration of the railways.

3. The Board should have one Chinese and one foreign secretary, as well as other necessary assistants, and should appoint travelling inspectors and auditors for the various railways.

4. The Secretariat of the Board should have the duty

of purchasing the main part of railway supplies. Purchase should be made on the basis of open bids.

5. Staff members of "branch offices" (from what is said elsewhere, staff of "branch offices" seem to indicate the individual railway staffs) should all be appointed by the Board, and their salary and permissible leave of absence should be standardized.

6. The foreign members of the Board should be paid by the banking interests they represent, while the Chinese members should be paid out of the railway receipts.

7. The Board should have control over all receipts and disbursements of the railways, should have the power of reinvesting the surpluses in the railways, and should make a full report of the accounts once a year.

The above is our plan for an International Board. But, says the memorandum, international administration of the "branches" (as used here, this apparently indicates the individual railways. See below) is a difficult problem. All the different railways have complications which cannot be wiped out and the languages and construction designs are not the same. The only way to solve this problem is to have the chief administrative office of a railway filled by a man from the country which has control over the line at present, while his assistants should represent several other countries.

The chief administrator of a line is the chief engineer before the line is in operation, and the director after that. The Chinese are unwilling to have foreigners as directors, but judging from the case of the Shanghai-Nanking Railway, they should understand that this is the only system that is satisfactory. Sometimes the administrative power is still in the hands of the Chinese director, but he is incompetent and has no experience in railway administration.

proper demands of his superiors, and is therefore unfit for the post. To avoid this, the foreign chief under the director must hereafter be placed in the same rank as the director, and not under him. On each line there are five chiefs, of five departments, viz., chief accountant, chief engineer, chief traffic manager, chief of locomotive department, and chief of stores department. Below these five chiefs the staff should consist mostly of Chinese.

The memorandum includes a plan for the distribution of the international staff among the different railways. There are at present thirteen lines, each of which must have a general manager and five chiefs of the departments, making 78 men in all. Of these 78 there should be 22 Englishmen, 20 Americans, 16 French, 9 Belgians, 9 Japanese and 2 Russians. There will be also many foreigners in other capacities. This plan of distribution seems to coincide to a great extent to the plan suggested by Mr. Mayer some time ago, which we append at the end for the sake of comparison.

**Telegram of Mr. Yeh Kung-cho and Dr. Wang Ching-chun  
from Paris.**

On May 26 Mr. Yeh and Dr. Wang addressed the following telegram to the President, the Cabinet, the Advisory Committee on Foreign Affairs, the Financial Committee, the Ministry of Communication, and the Railway Association. It reads as follows:

The railway question has lately been the subject of much discussion. It is certainly a very important subject. We had heard something about it before we left for Europe, and had offered our humble suggestions to you. On our way through Japan and America, we gathered here and there



news and opinions about the matter, and after reaching Europe our Peace Conference Delegates again showed us all the official telegrams concerning this question as well as giving us all information about the situation in Europe and the public opinion at home.

After taking all these things into consideration, we believe that it is absolutely necessary for those who hitherto held different views to agree as soon as possible on some single policy. The question may be brought up in one of two ways. Either it be brought up by ourselves or by foreigners. If we have no agreed policy, we cannot proceed with the matter in the former case, and we cannot deal successfully with the foreigners in the latter. We would be at the mercy of the foreigners and unable to control the situation. The bank representatives of the different countries are now meeting in Paris, and we should lose no time in adopting a definite policy.

The diversified opinions of our people may be summed up in one sentence. They hope to abrogate the spheres of interest, but they oppose international administration of our railways. They agree perfectly well in their intention to improve the conditions of the country, although they differ in the emphasis laid on one point or another.

As a matter of fact, abrogation of spheres of interest is not incompatible with opposition to international administration. We want to abrogate the spheres because we want to prevent the growth of undue foreign influence in China. If railways of a political nature (foreign controlled railways?) can be taken out from the influence of one country and put under the joint influence of many countries,<sup>c</sup> and new lines financed also jointly under some

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c. The Chinese terms used here are very ambiguous, and we are not certain whether our translation is correct. The original reads: 倘政治性質之路能發生各國共同關係

plan satisfactory to us, many diplomatic complications will be avoided, and railways will be better developed. That would be the best thing for us. However, the plan must not be like those suggested by Mr. Baker and others, which naturally arouses the opposition of the people, and therefore cannot be practiced. The important thing at present is to draw up as soon as possible a plan of our own, which will be practicable and at the same time acceptable to the nation. To that end we venture the following suggestions :

#### **Plan of Yeh and Wang.**

1. All former railway agreements made by the Government or private companies (excepting the railways under 5) with foreigners, irrespective of the nature of the contract and the cause for making the agreement, should be all nullified. In their place the arrangements outlined under 2, 3, and 4 should be made, and all parties should agree that no more concessions should be made like those nullified.

2. In contracting foreign loans, the Chinese Government should approach all foreign banking groups ("group" here stands for a syndicate of all the banks of any one country which are interested in Chinese railway loans, and not the syndicates now existing) at the same time, instead of any one of them individually. But if the banking group of any one country offers better terms than others, we should have the right to accept its offer to the exclusion of others. If the better terms are offered by more than one country, the loan should be divided by these countries making the same offer. All other countries willing to modify their terms in the same way as those we have

accepted should be allowed to share their quota with the former ones.

3. Bonds that have been underwritten but not yet sold out should be turned over to the consortium of all banking groups. The Chinese Government should decide upon the division or combination, preservation or abolition of the lines, as well as the order in which they should be constructed, at a meeting of the representatives of all banking groups. After the lines have been so decided upon, no further change should be allowed unless on account of practical difficulties, in which case the approval of the Chinese Government should be first secured.

4. Railways in our territory constructed partly or wholly by foreigners should be bought back by the Chinese Government, the capital to be obtained from all the banking groups jointly, under terms to be separately outlined.

5. Peking-Mukden and other railways already constructed should be left as they are.

According to such a plan, there can be no problem arising from such as the Canton-Hankow railway. In case of the railways under 4, even if they be put under international administration, it would still mean a gain to us.

The above are suggestions concerning our relation to the loaning banks. As to unification of railway administration, it is a quite different matter about which we should have a fixed policy long ago. To help formulate such a policy we offer the following suggestions.

#### **Unification of Railway Administration.**

1. For the Szechuen-Hankow railway we should engage experts in all lines to standardize construction, locomotives, materials and system of transportation.

2. We should make railway accounting completely independent, and the accounts should be audited by experts and published at fixed intervals. Railway surpluses should not be appropriated for other uses, but should be deposited with special banks to be organized for the purpose.

3. In contracting for railway construction and purchasing of materials, the standards mentioned in 1. should be adopted. Everything should be done by open bidding, but preference should be given to native products. Factories should be established in the country to supply the rails, locomotives, and cars.

4. The Chinese Government should have full power to fix rates and appropriate cars and engines for the transportation of troops.

5. Whether a special railway bureau should be established or not should be determined according to the needs of the time. If established, it should have three departments—(a) executive, (b) auditing, (c) controlling committee (the original is 計設委員會, which seems to mean a committee for planning new lines, but the suggested constitution of the committee does not fit in with this interpretation). Many foreigners may be included in the auditing department with fairly extensive powers but the executive department should consist entirely of Chinese, except perhaps a few foreign experts as employees. The committee should be made up of the highest administrative officers and Chinese and foreign experts.

6. Both Chinese and foreign employees of the middle grade should be engaged by civil service examination system, and rules for rewards, punishments, and increase in salary should be soon passed.

7. Chinese should be trained for all kinds of railway service so that some day all railway employees would be

Chinese. Some one foreign language should be chosen and used on all lines. Railway police should be entirely composed of Chinese and controlled by China.

Minor details can be decided upon later. In our opinion, continued the telegram, the above plans will include all points that would be advantageous to us while excluding all those that are disadvantageous. Besides, they seem to agree more or less with the proposal outlined in the telegram of the Cabinet of March 10. However, the financial conditions all over the world being so stringent, the possibility of solving this problem is uncertain. There must be many excellent plans being proposed in the country, but we hope that our humble suggestions will receive your kind consideration. We hope also that you will give us an early reply so as to enable us to proceed with our work.

#### **The New Consortium.**

Since June, 1919, when the second instalment of this article was published, the railway question has been relegated to the background for nearly a year, while the writer has been engaged in a different line of work,—in studying the accounting system of a large iron works,—which diverted his attention from an economic policy of the Government to the industrial administration of a factory. The recent organization of the New Consortium once more calls back our attention to the former question, only with this difference, namely, that China can no more play such an active part as she might have done when the question was first brought up before the Paris Conference. The terms have now been formulated by the foreign banking

interests without consulting China, and the best the Government can do is, as it is doing now, to reject these terms with the hope of their being modified. We shall not enter into the details of the organization of the Consortium, but shall only mention those arrangements made by it with regard to the railways.

At the Paris Conference the financial representatives of America, Great Britain, France, and Japan agreed on certain principles to be followed by the New Consortium. Among them was the agreement that "all the rights and concessions which had been obtained by the Powers concerned with the New Consortium, but which had not yet been carried into effect, should be transferred to the New Consortium." At the same time Japan claimed that she had special interests in Manchuria and Mongolia, and asked to have these two extensive regions reserved from the application of the general principles.

To this the other Powers naturally could not agree, especially the United States, which first advanced the idea of organizing such an international financial agency. Much negotiation ensued until at last Mr. Thomas Lamont of J. P. Morgan Company, who was sent by American banking interests to make special arrangements in the Orient, was able to announce publicly that Japan had taken back these reservations. It was simultaneously announced that the following railway lines in Manchuria were to be reserved by Japan, on the ground that they had particular bearing on her national defence. Thus the final result was what we might call a compromise, an arrangement which substantiated both Mr. Lamont's statement that the reservations were withdrawn and the statement of certain influential Japanese that they were finally retained.

**Railways Reserved by Japan.**

Railway.	Mileage. <sup>f</sup>
Chengchiatun Taonanfu . . . . .	140
Changchun Taonanfu . . . . .	180
Kaiyuan Hailung . . . . .	150
Kirin Hailung . . . . .	100
Chengchiatun Kailo . . . . .	130
Kirin Hueining . . . . .	260
	960

Conforming to the agreement for transfer to the New Consortium rights and concessions which had not been carried into effect, the following lines are to be handed over by the Powers :

Railway.	Mileage.
<b>I. Great Britain.</b>	
Pukow-Sinyang . . . . .	270
Nanking-Hunan . . . . .	615
Shasi-Hsingyi . . . . .	770
Four other lines . . . . .	600—700
Part of extension of Hu-Kwang about . . . . .	230
	2585
<b>II. France.</b>	
Chinyu . . . . .	700
Part of extension of Hu-Kwang . . . . .	230
	930
<b>III. United States.</b>	
The so-called 1100 mile line . . . . .	1100
Part of extension of Hu-Kwang about . . . . .	230
	1330

<sup>f</sup>. These figures are mainly based on the report in the North China Standard, and disagree with those in the China Year Book and the Commercial Atlas and Gazetteer. The last two also disagree between themselves.

IV. Japan.

Taonanfu Jehol	. . . . .	470
Kaomi-Hsuchow	. . . . .	220
Tsinan-Shunteh	. . . . .	150
		<hr/>
		840

V. Belgium.

Lunghai . . . . .	800
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From the above it is clear that the Chinese railways are to be internationalized through arrangement of the New Consortium, only so far as projected lines are concerned. The process of internationalization includes not only the taking over of these concessions by this international body, and the provision of funds by it for the construction of these lines, but also the joint administration of them under some such plan as mentioned in the first two parts of this article, or as it is tried out on the Chinese Eastern Railway.

Although it will not affect the existing lines, the choice of one plan or another of joint administration, and the amount of control China will share in it—when this part of the arrangement of the New Consortium should be agreed to by China and put into effect—will mean a great deal of difference to this country, which requires very careful consideration when the time comes and the details of the plan are announced.

**Classification of Railways.**

In conclusion, we shall sum up the situation by making a classification of all Chinese railways from the point of view of foreign control. First in the list may be placed those 'ceded' railways which are owned and operated by foreign interests for a fixed period of years. The Shantung and the Chinese Eastern Railways are now engaging the attention of the Government. The former should revert to



China after the declaration of war with Germany, but Japan is trying to establish her influence over the line. The latter is still under temporary joint Allied control.

A new agreement has been signed between the Chinese Government and the Russo-Asiatic Bank, the original contracting parties with regard to the old railway agreement of 1896, but Soviet Russia on the one hand, and France and Japan on the other, are asserting their claims over it on various grounds. As to the remaining three—the French Yunnan Railway, the Japanese South Manchuria Railway, and the English section of the Canton-Kowloon Railway—they are not likely to raise any problem at this time.

Similarly, no question will arise in connection with the lines which are constructed and operated purely with Chinese capital. It is the railways of the third class that will demand the attention of the Chinese Government as well as the New Consortium—those lines which are owned by China but financed with foreign capital. These may again be subdivided into two kinds—those that are in operation and those that are only projected. The New Consortium is now chiefly concerned with the latter, but as repayment of the loans on some of the existing lines will be due in the next few years, it is questionable whether its activities will not soon extend over them in case of default.

Thus the question of railway internationalization, though it seems at present to have been narrowed down to one sub-class of railways, has by no means dwindled in significance, when we consider its possible application to special cases in other classes, as well as the lines in the foregoing tables, and the still more extensive lines which China is bound to construct if she wants to have adequate means of communication for her vast territory.

**Mr. Mayer's Plan for the Distribution of the International Staff.**

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Railway	General Manager	Chief of Construction Dep't.	Chief of Accounting Dep't.	Chief of Traffic Dep't.	Chief of Locomotive Dep't.	Chief of Stores Dep't.
1. Chinese Eastern...	Russian .....	Russian.....	French .....	French .....	American.....	American .....
2. South Manchuria	Japanese .....	Japanese .....	English.....	American.....	Japanese .....	Japanese .....
3. Peking-Mukden & Tientsin-Pukow ...	English .....	English.....	English.....	American.....	English.....	American.....
4. Shanghai-Nanking & Shanghai-Hangchow-Ningpo .....	English.....	English.....	American .....	American.....	American.....	English.....
5. Canton-Hankow & Canton-Kowloon	English.....	English.....	American .....	Japanese .....	English.....	American.....
6. Peking-Hankow & Chengting-Taiyuan	French .....	French .....	French .....	Belgian .....	Belgian .....	Belgian .....
7. Lunghai .....	Belgian .....	Belgian .....	Belgian .....	French .....	French .....	French .....
8. Pukow-Sinyang ...	English.....	English.....	American .....	English.....	French .....	French .....
9. Hankow-Ichang ...	American.....	American.....	English.....	American.....	American.....	English.....
10. Szechuen.....	French .....	French .....	Belgian .....	American.....	American.....	English.....
11. Yunnan.....	French .....	French .....	Belgian .....	English.....	French .....	Belgian .....
12. Peking-Suiyuan ...	American.....	American.....	English.....	French .....	Japanese .....	Belgian .....
13. Shantung.....	Japanese .....	Japanese .....	English.....	American.....	American.....	Japanese .....
Total .....	Americans 21	Englishmen 20	Frenchmen 16	Belgians 10...	Japanese 9 ...	Russians 2 ...

**Mr. Baker's Plans.**

**PLAN A.**

**International Railway Commission.**

1. Each of the five nations (England, U. S., France, Japan and China) shall have a representative of its Government in the Commission, and these representatives shall have equal voting power.
2. The five nations shall have equal shares in the loan. If any nation is unable to subscribe to the amount allotted, the bonds left over are to be put on the market for sale to the public.
3. The length of time during which these bonds shall run shall not exceed fifty years.
4. The loan shall be used (a) for the purchase of the Chinese Eastern, South Manchuria, Shantung and Yunnan Railways (with approval of the commission, these railways or some of them may be left to the original administration); (b) for the construction of new lines or the extension or improvement of old lines; (c) for the redemption of bonds of all other railways.
5. The most suitable materials and the most reliable men should be employed in the construction of railways.
6. Before the loan is paid up, the Commission shall administer the railways which make use of the loan. The Commission shall report its doings to the Chinese Government, which has the power to inspect the accounts of these railways, at its own expense.
7. When approved by the Commission, the management of any railway may be sublet to some private company, but the said private company shall be entitled to not more than one-fifth of the net profits of the railway.

8. Within 30 years after the organization of the Commission, all the revenue of the railways collected by the Commission shall be spent on the railways. After the 30 years are over, the Chinese Government may make use of the revenue or other Government revenue to pay back the international loan, at the rate of not more than 5% of the total amount every year.
9. During the period of construction and the subsequent period of operation, all regulations regarding appointments, dismissals, and salaries shall be devised by the Commission, but wherever Chinese may be employed, they should have precedence over foreigners.
10. In the making of rates and other business arrangements, no discrimination shall be allowed in favor of any nation or any party.
11. Whenever economically advantageous, the Commission shall purchase railway materials and supplies from manufacturers in China. (Chinese manufacturers?)
12. The Chinese Government shall guarantee security of life and property along the railway lines, but if necessary, the Commission shall have power to employ watchmen or policemen for the same purpose, provided there shall be not more than one man for each kilometre of the line.

#### PLAN B.

##### **International Railway Company.**

1. The foreign banking syndicate shall have representatives on the board of directors of the International Railway Company.
2. All loans of the Company to be floated outside of China shall be underwritten by the banking syndicate.
3. The capital of the Company shall be employed in the

following ways : (a) to purchase, if considered necessary, all railways which are already constructed, on behalf of the Chinese Government; (b) to construct new lines ; (no other country or organization shall have the right to construct railways in China but the Chinese Government itself may construct new lines with Chinese capital) (c) to extend lines which are already built, and to improve and add to their equipment; (d) to redeem railway bonds held by other organizations, with the approval of the Chinese Government.

4. The Company is to be a purely administrative body. Materials and men are to be employed for the construction of new lines without regard to their nationality.
5. The Chinese Government shall appoint directors of the trunk lines built with the capital of the Company. These directors shall have full administrative power over the railways. During the period of construction, the Company shall recommend a chief engineer, and during operation a chief manager. The chiefs of the engineering, traffic, accounting, maintenance and supplies departments, as well as the chief of police, shall be recommended by the chief engineer or chief manager to the director, from whom they shall receive their appointments. The chiefs of these departments shall report to the chief engineer or chief manager the men employed in their respective departments. A copy of their reports shall be transmitted to the director.

#### PLAN C.

##### **The Far Eastern Convention of 1919.**

1. The International Committee shall be organized with one representative from each one of the five following

- nations; namely, the United States, France, England, Japan and China. Within a period of 50 years, all foreign employees on the railways which are controlled by the Committee, as well as their terms of office, shall be under the control of the Committee.
2. The foreign members of the Committee shall be appointed by the financial organizations of the different countries so that they shall be able to give China financial assistance.
  3. The railways that are to be bought back shall be (a) the Chinese Eastern Railway from Harbin to Changchun, (b) the South Manchuria Railway, (c) the Shantung Railway, and (d) the Yunnan Railway.
  4. In order to purchase the above mentioned railways, the Committee shall issue bonds which shall be secured with the railways and their revenues after this plan is put into execution. The Chinese Republic shall also guarantee their payment.
  5. The Committee shall first secure the approval of the Minister of Communications before supplying capital for the construction of new railways.
  6. The securities of railways now in operation shall be guaranteed or bought back by the Committee by arrangement with the party holding them, and the management of the railways shall be brought under the supervision of the Committee.
  7. In constructing railways, bids shall be open to engineers of all nations. The Ministry and the Committee shall then accept the bid that is considered most suitable, without regard to the nationality of the bidder. The same method shall be applied to material and employees.

8. The bonds issued by the Committee shall run not more than 50 years after the signing of this agreement.
9. With the approval of the Minister of Communications, the Committee shall appoint an "executive secretary" to keep minutes of the meetings, who shall be a Frenchman or a Japanese. The "executive secretary" shall carry out the orders of the Committee, and shall nominate for appointment by the Committee such assistants as shall be deemed necessary.
10. Each railway shall have a director to be appointed by the Ministry of Communications. Railways under construction shall have a chief engineer, and those under operation a chief manager, to be appointed by the Committee upon recommendation of the secretary. After the loans secured with the railways are paid back, the Minister of Communications shall have the power to demand the appointment of qualified Chinese to be chief managers.
11. Same as 9 in Plan A.
11. Same as 10 in Plan A.
13. Same as 11 in Plan A.
14. Same as 12 in Plan A. But if the Chinese Government should neglect its duty in providing for such security of life and property, the Committee may act on the appeal of the signatory powers and take steps to bring about the desired result.

**Details for the Execution of Plan C.**

According to plan A, the whole power would be in the hands of the international body, while plan B provides for an organization which would be not much different from that of the trunk lines at present. Therefore, there is no

need of planning out the details. Plan C alone requires further consideration.

1. (A table showing the forms of organization and methods of administration.)
2. The members of the executive department shall be nominated by the secretary and their appointment approved by the Committee. They shall be expert advisers, including a civil engineer, a mechanical engineer, a traffic expert, an accountant, a purchasing agent, and a number of assistants.
3. The directors of the railways shall be appointed by the Ministry of Communications, and shall represent the different roads in all transactions with the Ministry and other organizations. The chief manager and the chief engineer shall report everything about the railways to the directors, who shall in turn report the important ones to the Ministry.
4. All heads of the foreign staffs, for instance, the chief manager and the chief engineer, shall be nominated by the secretary and approved by the Committee. But if the chief engineers or the chief managers be incompetent or act beyond their authority, the Minister of Communications shall have the right of discharging them from office.
5. The subordinates of the different departments shall be nominated by the respective chiefs and presented to the secretary for the approval of the Committee. The chiefs shall be responsible for the conduct of their subordinates, and shall have power to remove them.
6. Difference in nationality shall be disregarded, in order that the different nations may be mixed up. Whenever subordinates are to be appointed, the secretary of the Committee shall prepare a list of men of nationalities



different from that of the chief under whom they are going to serve, and the chief shall nominate from the list.

7. (Proposed system of organization of the different roads).

**Explanatory Notes to Plan C.**

1. The time limit should be so provided for that China shall be able to do away with foreign influence over her internal affairs at the earliest opportunity without affecting the execution of the plan.
2. (Missing).
3. All Chinese lines should of course be Government property, but the two sections of the Chinese Eastern Railway should be under the administration of Siberia, (of the Siberian Railway?) the Yunman Railway under another separate system, and the South Manchuria line, belonging as it has been to the Korean Railway system, would probably have to remain so. However these railways should report their tariff rates, traffic management and accounts to the Chinese Government.
5. Lines of political importance should be constructed without delay, even though they be commercially unimportant. The power of specifying such lines should reside with the Chinese Government.
6. It is very desirable that the railways in operation should come under this general system, for the following reasons :
  - (a) It will enable the whole system of railways of the country to develop in proper order ;
  - (b) They may be used to guarantee the interest payment on the loans ;
  - (c) Their materials, equipment and system of management may be unified and standardized;

- (d) It will promote the manufacturing of consumption goods in China;
  - (e) It will bring about much saving by purchasing materials in large quantities;
  - (f) It will enable the new lines to have the best terminals and to be near the best harbors;
  - (g) The present railways can make use of the new ones as their branch lines, and there will be no lack of co-operation in developing their traffic;
  - (h) It will be very easy to arrange for through traffic.
7. The purpose of this plan is to enable China to protect herself, and to supply the world market with enormous quantities of her products, so that both China and the foreign nations will enjoy peace and prosperity.
  8. The success of this plan depends entirely upon the sincere co-operation of other nations with China. At the present time we can offer the people the hope that the time will come when complete success will be achieved, foreign spheres of influence over Chinese railways will be abolished, and foreign nations will no more look upon the railways as their private property.

*Note.*—The above is a translation from a Chinese version of Mr. Baker's plans which appeared in the *Kung Yen Pao*. The table of organization and the proposed system in the details for execution of plan C, as well as items 2 and 4 of the explanatory notes, were not given in the Chinese version.

## VI.

### The Iron and Steel Industry in China, Its Cost of Production.

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Iron and steel have been for centuries manufactured in this country, but not until recently were they manufactured according to modern processes. The old method of manufacturing, which is still employed in small scale production, is simple and crude, and involves very low costs, chief of which are raw materials and direct labor. There is no way of finding out the exact cost in such cases, owing to the variety in the composition and quality of the product. Hence our study will be confined to the manufacturing cost in the modern iron and steel works.

Of the modern works the greatest is undoubtedly that at Hanyang, owned by the Hanyehping Company, which was made particularly well-known by an exchange of notes between China and Japan in connexion with the infamous Twenty-one Demands of 1915.

The same company has two new blast furnaces at Tayeh rated at 400 tons, where its iron mines are situated. Nearby is the Yangtze Engineering Works, which has a blast furnace at Seven Mile Creek, Hankow. The Lung Yen Iron Works at Shihchinshan (石景山) installed a 250 ton blast furnace plant in 1922, while two iron works are situated in Manchuria, at Penhsihu (本溪湖) and Anshan (鞍山) respectively. They are both operated with joint

Chinese and Japanese capital, the former having three blast furnaces and the latter two.

#### **Cost of Pig Iron.**

We shall start with the manufacturing cost of pig iron at one of these modern works to be designated as Works A. The writer was for some time cost accountant of that works, and collected the data which served as basis of this study. According to the accounting system then adopted, the cost of pig iron is made up of five items, each of which is again sub-divided. The five items are: (1) raw materials; (2) direct wages; (3) manufacturing expenses; (4) general expenses; and (5) financial expenses. Under the first heading are grouped all kinds of raw materials—iron ore, manganese ore, limestone, coke, and many other varieties of iron sometimes used in place of iron ore, such as scrap iron, native white iron, reheating furnace slag, and mill scale. The first four kinds of materials form the chief constituents of pig iron, because, in addition to iron and manganese, pig iron contains silica, which is obtained from limestone, and carbon, which is obtained from coke. It also contains a certain percentage of sulphur and phosphorus, both of which come from the ore itself.

The most expensive single item among raw materials, which is also the most expensive of all items of cost, is coke. For the first seven months of that year, the figures varied from 45.7 to 55.4 per cent of the total cost of pig iron. And yet the coke is of the best grade, only about 120 tons of it being necessary for the production of 100 tons of pig iron. The coke is produced at the Company's own colliery, from coal of such a quality that it takes only about one ton of coal to produce one ton of coke. Under such exceptionally favorable conditions, it needs some explanation to justify

the value per ton of coke at \$20, and that of pig iron at \$47 to \$53. (average for 7 months, \$48.50). This explanation will be given in the course of this study.

The next largest item of cost in raw materials is iron ore and other substances containing iron. Of these, mill scale, furnace slag and scrap iron need hardly be considered, as they are only used to a very limited extent, and would be sold at a loss on the market if not consumed in the blast furnace or the melting shop. The native white iron used at this works is very costly, ranging from 2 to 13.5 per cent of the total cost. However, as the use of this kind of raw material is unnecessary, and as it was used simply because the works had it in store—being bought years ago at farcical prices—it should not be seriously considered as an important item of cost.

#### **The Iron Ore.**

The iron ore, of which from fifteen to twenty thousand tons were required every month when three of the four furnaces were under operation (perhaps another eight or nine thousand tons would be needed for the fourth furnace) comes from the Company's own mines. The cost of its production was below \$2.80 per ton, but the cost of transportation per ton from the mines to the works was 85 cents, which, together with other expenses, brought the cost up to about \$4 per ton at the furnaces. This cost is now much lowered by smelting the ore in the new blast furnaces at the mines, but at the same time a greater allowance must be made for coke which has to be transported a longer distance from the colliery to the new furnaces. As nearly equal quantities of coke and ore are used in the furnaces, the saving effected in transportation is not of much significance.

Limestone also comes mainly from the Company's mines. The cost per ton at the furnaces varied between \$2.32 and \$3.81. These figures include all transportation and overhead charges. Manganese comes from the Company's mines at other localities. These two items amounted to three or four per cent of the total cost. The following figures for the first seven months of the year studied will show the comparative costs of the different kinds of raw materials.

Month	Coke	Iron Ore.	Native White Iron	Manganese Limestone etc.	Total for Raw Materials
	%	%	%	%	%
January	45.7	13.8	13.5	3.9	76.9
February	48.1	14.7	5.2	4.7	72.7
March	47.0	12.2	9.7	4.7	73.6
April	55.4	14.1	1.9	4.2	75.6
May	51.8	13.4	8.1	4.3	77.6
June	52.5	13.4	7.9	4.7	78.5
July	53.7	12.7	8.4	5.0	79.8
Average	50.6	13.5	7.8	4.5	76.4

The above refers to raw materials. The next group of cost items concerns direct wages. This includes not only the wages of labourers working at the furnaces, but also of those working at the blowing and pumping plants, both of which are essential adjuncts to the furnaces. There are in the works blowing and pumping plants for each set of two furnaces, and the wages of the labourers working at these plants are therefore divided into two equal parts, one part being assigned to each furnace. For convenience sake, the labourers working at the furnaces are also divided into four groups. The first group works at the stock-house where raw materials are fed into the furnace; the second watches the smelting process through which the materials

pass ; the third attends to the casting hall where the molten iron flows into the moulds ; and the last group looks after the devices by which the slag is disposed of.

#### **The Advantage of Cheap Labour.**

The wages of the labourer differs not so much with the group in which he works, as with the grade of labour to which he belongs. In general the labourers are divided into four grades ; namely, the foremen, the mechanics, the regular labourers and the helpers who are paid by the day. The salaries of the foremen may be in some cases as high as one hundred dollars a month ; the mechanics receive about twenty dollars ; the regular labourers from 8500 to 9000 cash (at the rate of exchange between silver and copper then, about \$7.00), and the helpers get only 200 cash a day (about 15 cents). In some cases contract labour is also employed.

The labourers work in two shifts, night and day. In each shift about two foremen, three mechanics, and fifty labourers work at each of the small furnaces, and about twice as many labourers work at the large one. As the wages are very low, the total cost in direct labour for all three furnaces totals only from 0.8 to 1.4 per cent. of the total cost of iron production. The advantage of cheap labour is phenomenal, and if the iron industry does not prosper, and if the cost of iron does not stay below that in other countries, the blame cannot be laid on labour. It cannot even be said that the latter is cheap but inefficient, because inefficient labour would combine a low rate per man with a high per cent. cost per unit of product, which condition does not obtain in the present case.

The next group of cost items is manufacturing expense. This comprises power, light, water, supplies and stores,

replacment of tools, repairs and maintenance, new minor works, transportation in the works, laboratory expenses, depreciation and royalty. Steam power is supplied by boilers of the same department. Electric power, which is also used in the smelting plant, as well as light and water, is supplied by the mechanical department of the same works. Heat, an ordinary factor of cost, is unnecessary for those working at the furnaces, and for the office rooms and repair shops it is charged to "general expenses" or "repairs and maintenance." "Supplies and stores" includes all materials requisitioned for use at the furnaces or the blowing or pumping plants, except those that are in the nature of tools, which come under "replacment of tools." Yet, in actual practice, it is found that the line of demarcation is very hard to draw between the two, and consequently the latter heading has been abolished.

#### **The Question of Depreciation.**

A similar difficulty is experienced in making a distinction between "repairs and maintenance" and "new minor works." The problem is only solved by arbitrarily assigning all works involving a cost of more than \$500 to the latter, and those of less than that value to the former as maintenance. Of course, very large capital outlays are entered in the capital accounts, and are charged off to the cost of production as depreciation. The transportation expenses are confined to the transportation of pig iron in the works, as charges for transporting raw materials and supplies and stores have already been taken account of under these two headings. The laboratory expenses are charges of the laboratory department for testing pig iron, etc., for the blast furnace department.



Provision for depreciation is always a difficult question, as different plans have different advantages. But where a plant has been working for many years without a proper system of accounting—as is the case here where even the original cost of constructing the plant is more or less forgotten—it becomes ten times harder to provide for depreciation. To make the best of the situation, a blanket charge of 5% on the value of the plant is written off every year as depreciation, and physical valuation serves as the basis of calculation. The whole works has been valued more than once, but the most detailed estimates were made in 1909 by two foreign engineers engaged by the Company. The provision for depreciation is based on that figure.

The last item in this group is royalty. Many years ago, it was agreed between the Government and the works that the latter should pay as royalty one tael for every ton of pig iron produced. This item of cost, therefore, varies directly in proportion to the quantity of production. The percentage of all manufacturing expenses combined ranged between 5.9 and 13.2. This, too, is very low compared with corresponding items for iron production in foreign countries.

The general expenses include both the overhead charges of the Blast Furnace Department and those of the whole works. These two expenses form the last two groups of cost items in pig iron production. The former varies from 3.9 per cent. to 6.2 per cent. of the total cost, and the latter from 4.5 to 7.7 per cent. The "financial" expenses consist of only one item, the interest on capital outlay. Much as has been said against the inclusion of interest in the cost of production, there is strong justification for its inclusion when the company controlling the production is heavily in

debt, and its plant is virtually mortgaged to the creditors. The Company has borrowed heavily and for such loans it must pay fixed interest charges. If these charges are not, in a sense, distributed over the products, the Company may be losing money when the selling prices of its products apparently include a wide margin of profit. The high percentage of this item, interest, compared with other cost items, shows how easy it would be to reach such a paradoxical result.

**Raw Materials 90 Times the Cost of Direct Labour.**

Taking all cost items into consideration, we find that direct wages constitute the smallest percentage, and raw materials the largest, and the ratio between the two is as much as 1 to 90 (for March). Such conditions cannot be found elsewhere. The percentages for manufacturing and general expenses are not unusual, although they are lower than like percentages in other countries. The charge for interest is rather high, but this is due to the special conditions under which the plant is being worked. The following table is compiled from the cost data of the Blast Furnace Department:

Month	Materials	Labour	Manufacturing Expenses	General Expenses	Financial Expenses
	%	%	%	%	%
January	76.9	1.2	11.4	4.0	6.0
February	72.7	1.4	12.0	6.1	7.7
March	73.6	0.8	13.2	6.2	6.2
April	75.6	1.2	12.3	5.2	5.7
May	77.6	1.1	12.3	4.2	4.8
June	78.5	1.0	11.8	3.9	4.8
July	79.8	1.0	10.5	4.3	4.6
Average for 7 months	76.4	1.1	12.0	4.8	5.7

It may be pointed out here that, except in overhead charges and a few other expenses which under the existing conditions, cannot be allocated to the different furnaces, all items of cost vary with the furnaces. As has been stated, there are four furnaces in the works, three of which were under operation then. The cost figures given, unless otherwise specified, are average costs for all three furnaces. Furnace No. 4 was for some time used in smelting iron for another company and the expenses involved were kept in separate accounts and calculated on slightly different bases.

#### Large Versus Small Furnaces.

Of the three furnaces under operation, Nos. 1 and 2. are small and of an old type. Their receptive capacity is 248 cubic metres each, and each can produce daily from 90 to 100 tons of pig iron. Furnace No. 3 is twice as large as No. 1 or 2., with a capacity of 477 cubic metres, producing 230 to 250 tons of pig iron every day. It was purchased from Germany; as was also Furnace No. 4, the capacity of which is nearly the same as No. 3. Operation of these "new" furnaces, as the last two are called at the works, entails lower cost of production than the old ones. A comparison of the cost by furnace will prove this statement.

Month	Cost per ton at Furnace No. 3 compared with that at		
	Furnace No. 1	Furnace No. 2	Average cost of all 3 furnaces
January	\$6.38 less	\$5.15 less	\$2.54 less
February	4.07	3.17	1.68
March	9.99	9.82	4.49
April	3.14	3.34	1.49
May	2.37	2.12	0.99
June	4.14	4.04	1.71
July	3.83	11.67	2.73
Average for 7 months	4.86	5.62	2.22

Having considered in detail the cost of manufacturing pig iron in Works A, we shall now compare it with the cost at another works in China, to be called Works B. At the latter place the figures varied in 1915 from \$18 to \$22 per ton. The detailed items, according to estimates made by Works B itself, are as follows:

(For one ton of Pig Iron)

	of total cost
1. Ore... ..	25.5 %
2. Coke ... ..	28.7 %
3. Limestone ..	1.3 %
Total, raw materials ... ..	55.5 %
4. Labor ... ..	6.5 %
5. Miscellaneous (including repairs) ... ..	10.9 %
6. Depreciation ... ..	8.1 %
Total, manufacturing expenses ... ..	19.0 %
7. Officers (Corresponding to 'general expenses' in Works A.) ... ..	2.2 %
8. Interest on Fixed Capital ... ..	9.6 %
9. Interest on Current Capital tied up in unsold product ... ..	5.3 %
10. Replacement Reserve ... ..	1.9 %
Total, "Financial" expenses ... ..	16.8 %

By comparison with the cost of production at Works A, we find that that of Works B was less than half. It is true that price might have risen during the interval since 1915, but that certainly could not have caused a twofold increase in cost. Both works obtained their raw materials from their own mines, and the cost of these at least could not be much affected by market fluctuations. Nor could price affect depreciation and financial expenses. As these three items make up more than two-thirds of the total cost, it is plain that the cost of Works A—namely, \$48.50 per ton—must be due to something other than market changes.

### Coke, the Most Expensive Item.

A comparison of the percentages of the different cost items at Works A and B will show that the high cost at A is due mainly to the high cost of raw materials, especially coke. This item alone amounts to as much as 50.6 per cent of the total cost, almost the same percentage as all raw materials combined at B. And 50.6 per cent of \$48.50 means \$24.54, which is more than the total cost of iron at the latter place. On the other hand, iron ore at A constitutes only about 13 per cent of the total cost, while that at B is 25 per cent. Taking into consideration the difference in total cost at the two places, we find that it does not cost any more to A than to B. Direct labour is cheaper at A and "financial" expenses are lower. Manufacturing and general expenses are relatively higher.

	A	B
Coke ... ..	50.6% of \$48.50 = \$24.54	28.7% of \$20 = \$5.74
Ore ... ..	13.5% ... .. \$ 6.55	25.5% ... .. \$ 5.10
Raw Materials (including Coke and Ore) ... ..	76.4% ... .. \$37.05	55.5% ... .. \$11.10
Direct Labour ... ..	1.1% ... .. \$ 0.53	6.5% ... .. \$ 1.30
Manufacturing Expenses ... ..	12.0% ... .. \$ 5.82	19.0% ... .. \$ 3.80
General Expenses ... ..	4.8% ... .. \$ 2.33	2.2% ... .. \$ 0.44
Financial Expenses ... ..	5.7% ... .. \$ 2.77	16.8% ... .. \$ 3.36
<b>Total Cost ... ..</b>	<b>100 % ... .. \$48.50</b>	<b>100 % ... .. \$ 20.00</b>

The great difference therefore lies in the one item, coke. Works A coke costs much more than that of works B.,

not because it is produced from inferior coal, but because the cost of mining coal, of transforming it into coke, and of transporting the coke to the works is very high. As has been mentioned before, the coke used at A comes from its own colliery. At the colliery, 147 tons of coal produce 100 tons of coke, while at B, 166 tons are necessary. This means that A's coal is superior to B's. Yet one ton of coke at B costs about \$7.00, while at A it costs more than \$11.00. At B the coke is used where it is produced, because the iron works is located at the coal mines, while iron ore, which is produced at a nearby place, is transported to B for smelting. In the case of Works A, both ore and coke come from other localities, and the transportation charges for coke was as high as \$6.00 per ton. One ton of coke, on arrival at A, costs \$17.00, or \$10.00 more than it does at B.

#### **How Transportation Affects the Cost of Production.**

Thus far we have not taken into consideration the difference in the quality of the pig iron produced. According to analyses made for the two works by experienced metallurgists, the product of Works A contains about 94 per cent pure iron and about 4 per cent carbon, and that of B, about 93 per cent of pure iron. The difference, therefore, is not very great. By such comparisons we do not mean to show A in an unfavorable light. We mean only to point out the great handicap to industries on account of inadequate transportation facilities. Works A has its own boats to carry coke and ore, yet the cost is so very high. If cheap railway transportation be substituted for the boats, the cost might be greatly reduced. Thus, in estimating the cost of iron production in China, such unfavorable factors must be taken into account. Works B iron involved much lower

production cost, but when transported to the markets, it was also sold at more than \$40 per ton. Under such conditions, it is certainly very hard to develop basic industries which produce bulky commodities made from equally bulky raw materials. Unless transportation is facilitated, China can not expect to compete with other nations in such industries.

The manufacture of steel is a far more complex process than the manufacture of iron. It requires many more kinds of material. Some of these also go into the composition of steel, and may be called raw materials. Others are used as refractory materials, and still others as flux. Of course pig iron is the basic raw material. It is used in both its liquid and its solid state. Scrap iron and scrap steel are also used. Then, also, there must be iron ore, manganese ore, ferro-manganese, spiegel, ferrosilicon, and aluminium.

The refractory materials include dolomite blocks and peas, magnesite bricks and peas, chrome ores and bricks, silica bricks, and fireclay. The last substance is used in the form of bricks, mortars, sleeves, nozzles, and stoppers. All these refractory materials serve to increase the heat in the Martin furnaces. As flux to promote fusion, limestone, lime and fluorspar are used.

#### **Cost of Steel a Composite Figure.**

At the Works A, pig iron comes from the Blast Furnace Department. The ores and the lime come from the same place as the iron ore. The refractory materials are all prepared at the brick factory of the Works, while the remaining materials are purchased from different sources. For use as fuel, coal, coke, and fire-wood are required. The first two mainly come from the colliery; the last one is

bought locally. Thus, in calculating the cost of manufacturing steel, we must first take into account the cost of producing iron, lime, coal, coke and the different kinds of refractory bricks. The result is a composite which enters into the cost of steel together with the purchase prices of other materials used, the wages of labourers, the manufacturing and general expenses, and interest on capital outlay. As the last four items have been considered in detail in connexion with iron production, we shall not here go into them again.

The general composition of the cost of steel production may be represented in the following way :

I. Raw Materials.

Cost of Pig  
Iron to the  
Blast Furnace  
Dept.

Cost of iron ore, coke, manganese, limestone, and other raw materials.

Cost of labour.  
Manufacturing expenses.  
General expenses.  
Financial expenses.

Estimated value of scrap steel.  
Cost of iron ore.  
Cost of manganese ore.  
Purchase price of ferro-manganese.  
Purchase price of spiegel.  
Purchase price of ferro-silicon.  
Purchase price of aluminium.



**II. Refractory Materials.**

Cost of bricks and  
peas to the Brick  
Factory.

Cost of white clay.  
Cost of silica stone.  
Cost of chrome ore.  
Cost of dolomite stone.  
Cost of pebble.  
Cost of lime.  
Cost of coal tar.  
Cost of coke.  
Cost of labour at the brick.  
factory.  
Manufacturing expenses.  
General expenses.  
Financial expenses.

**III. Flux.**

Cost of limestone and lime.  
Purchase price of fluorspar.

**IV. Labour.**

**N. Manufacturing expenses.**

Cost of coal and coke as fuel; purchase price of  
wood.  
Cost of supplying steam, electric and hydraulic power  
by Mechanical Department.  
Purchase price of supplies and stores.  
Cost of repairs and maintenance.  
Cost of replacement.  
Depreciation charges.  
Shop overhead charges.

**VI. General Expenses.**

Departmental overhead charges.  
Works administration overhead charges.

**VII. Financial Expenses.**

Interest on capital outlay.

### Cost Records of Two Months.

The above shows quite clearly how much more complex than the cost of iron is the cost of steel production. Yet, with a proper system of cost keeping, it is no more difficult to find out the one than it is to find out the other. The Martin furnaces were in operation only for two months—namely, January and February—and during these two months, all of the seven furnaces were used at the same time. The percentages of the different cost items are given in the following table.

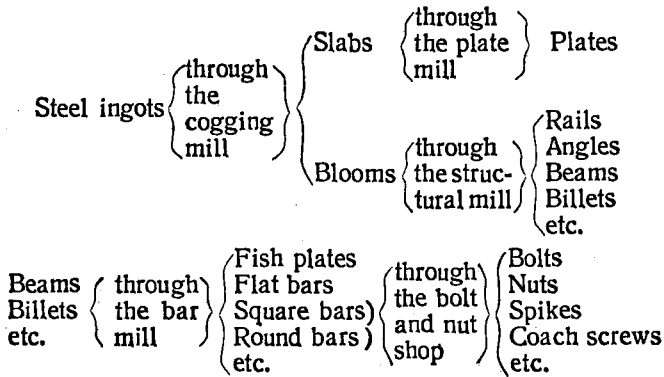
	I.	II.	III.	
	Raw Materials.	Refractory Materials.	Flux.	
January	54.50%	5.20%	.02%	
February	47.80%	2.50%	.25%	
	IV.	V.	VI.	VII.
	Labor	Manufacturing	General	Financial
		Expenses.	Expenses.	Expenses.
January	1.08%	28.10%	3.00%	8.10%
February	1.30%	29.20%	6.15%	12.80%

From the above table it will be seen that the situation is quite similar to that in pig iron production. Raw materials constitute by far the largest item, and amount to about half the total cost. Labour is again very cheap. It is something less than one and a half per cent. Of course it represents direct labour only, but even if all indirect labour cost be added, it would not exceed 3 per cent. of the total cost.

Manufacturing expenses in the production of steel are higher than those in iron production, and that is quite natural, due to the much higher temperature required, which involves a much greater consumption of fuel in the form of coal, coke and fire-wood. Although two additional groups

of cost items—refractory material and flux—are added, they do not amount to very much. The total cost of steel per ton was \$93.19 in January and \$107.37 in February. The difference was due to the much smaller production in the second month. It was only about half as much as was produced in January. As depreciation, interest and general overhead expenses must be charged without regard to the amount of production, the smaller the amount, the greater the cost. In fact, about \$60,000 has to be spent every month on the steel melting shop even when it is not in operation. This situation is true also with regard to iron production, or the production of any thing requiring costly plants and equipment.

Works A not only produces pig iron and steel ingots, but also steel bars, steel plates and steel rails. In the works there are five steel mills, manufacturing five different products. Some of the products go through the manufacturing process in one single mill, others in two mills, and still others in three or four mills. In the first case, the cost of the product includes, in addition to the cost of steel ingots, all the expenses involved in the one mill. In the second case, it includes the expenses of two mills. In the last case, as exemplified by steel bolts and nuts, the expenses of all four mills must be added to the cost of steel ingots. In fact, the five mills represent five stages of the manufacturing process, and when a product passes through a mill, something is naturally added to its cost. The manufacturing process may be illustrated by the following diagram.



#### Difficulty in Determining Cost of Steel Products.

Like that of iron or steel, the cost of making steel products may be analysed into a few items: raw materials, refractory materials, labour, manufacturing expense, general expense, and financial expense. As all these items, except the first, are more or less similar to those in iron and steel production, we shall pass over them and devote our attention to raw materials. On account of the situation as illustrated by the diagram, the raw materials for the different mills are different. Slabs, for instance, are the products of the cogging mill, but at the same time they form the raw material of the plate mill. The same is true of blooms, billets and bars.

In the manufacture of pig iron and steel ingots, only one product is obtained from one set of furnaces. So it is easy to figure out the cost per unit of any product. The unit is usually the ton, and to find the per ton cost, it is necessary to divide the total cost incurred by the furnaces by the number of tons of iron or steel produced. In the case of steel plates, rails, bars, etc., the per unit cost can not be

so calculated. They do not go through the same manufacturing process, and therefore they involve different amounts of cost. In fact, even the products of the same mill do not always involve the same cost per ton, but as there is no adequate method of keeping the cost of each individual product, all products of the same mill are taken to be equal in their cost of production. This is certainly not the best way of cost-keeping, but under the existing conditions in the mills, nothing better can be done.

The per ton costs of the different products were in the following ratios to one another. The cost of steel ingots, discussed some paragraphs back, represents 100 per cent, and the cost of products is calculated at so much per cent greater. The actual dollar value of the products can not be given, because it varies from month to month, and in no month of that year were all products manufactured simultaneously. The percentages are obtained by taking all months into consideration.

Steel ingots ... ..	100 %
Blooms and slabs ... ..	120 %
Plates ... ..	216 %
Round bars, square bars, fish plates, flat bars, spring bars, light rails, octangular bars...	215 %
Spikes, rivets, bolts and nuts ... ..	252 %

As I have no cost data of other steel works in China or Japan, I have nothing to compare with the cost of production of steel and steel products at Works A. However, by reducing all costs to percentages, we may arrive at some comparison with the cost of steel production in the United States. The following figures are based on data from the American Iron and Coal Trades Review, and apply to a similar period of time.

**Comparison with Cost of American Steel Products.**

Steel ingots ... ..	100 %
Blooms ... ..	112 %

Slabs	...	...	...	...	...	...	...	...	...	119 %
Plates	...	...	...	...	...	...	...	...	...	178—196 %
Bars and billets	...	...	...	...	...	...	...	...	...	149—202 %

Thus it will be readily seen that the cost of American steel products is lower than that of Works A products. It is not because the price of the American ingots is high, and therefore the additional cost of the products appears to be in small percentages. Quite the contrary, for the price of American ingots, even at the present rate of exchange<sup>a</sup> (about \$2.15 Mex. to U. S. \$1), is only about one-fourth or one fifth that of the Chinese steel. And this high cost of Chinese steel products can not be due to wages, which are very low, but must be due to some other item or items of cost.

As the five mills were not in simultaneous operation during the year under consideration, we cannot easily compare the percentages of the different cost items of the different mills. However, the following figures for the cogging, structural, and bar mills for the first month will give some idea of the general conditions.

	Cogging Mill.	Structural Mill.	Bar Mill	Average for 3 Mills.
I. Raw Materials	86.0	70.5	62.8	73.1
II. Refractory Materials	0.1	—	—	—
III. Labour	0.3	0.8	0.1	0.4
IV. Manufacturing Expenses	11.5	26.8	24.7	21.0
V. General Expenses	0.9	1.1	7.2	3.1
VI. Financial Expenses	1.2	0.8	5.2	2.4
Total cost	100.00	100.00	100.00	100.00

As the above figures are only for one month, and cover only three of the five mills, they may not represent the normal conditions unless we have some other way to check them. Also, the cost data for production of steel ingots given on page 213 applies only to two months, and may for the same reasons be unreliable. Hence we shall compare

a. 1921, when the article was written.

them with an estimate made by the Steel Department of the Works in preparing the Company's budget for the following year. The required quantity, price, and total money value of each material are given in detail, as well as total wages to be paid out to the different grades of labourers. The quantities of materials are given for an annual production of 60,000 tons of steel ingots and 45,000 tons of steel products of all kinds. Below we reproduce these estimated quantities, omitting the prices, and substituting percentages of the total material and labour cost (for producing the specified quantities of steel and steel products) for the total money value of each kind of material.

#### Material and Labour Cost.

Pig Iron	50,000 tons	...	...	...	31.63%
Scrap Iron	3,000 tons	...	...	...	1.50
Scrap Steel	20,000 tons	...	...	...	15.60
Iron Ore	10,000 tons	...	...	...	.65
Ferro-Manganese	600 tons	...	...	...	4.45
Ferro-Silicon	200 tons	...	...	...	1.37
Spiegel	50 tons	...	...	...	0.37
Aluminium	11,500 pounds...	...	...	...	0.21
<b>Total, Raw Materials</b>					<b>55.78%</b>
Dolomite Stone	12,500 tons	...	..	...	3.55
Magnesite Peas	500 tons	...	...	...	0.96
Chrome Ore	300 tons	...	...	...	0.42
Chrome Bricks	180,000 pieces	...	...	...	1.79
Silica Bricks	600,000 pieces	...	...	...	1.51
Fire Bricks	200,000 pieces	...	...	...	0.25
Fire Clay	1,000 tons	...	...	...	0.29
Quartzite	2,000 tons	...	...	...	0.03
Limestone	3,600 tons	...	...	...	0.20
<b>Total, Refractory Materials and Flux</b>					<b>9.00%</b>
Japanese Coal	35,000 tons	...	...	...	11.90%
Chinese Coal	83,000 tons	...	...	...	15.22
Chinese Coke	5,000 tons	...	...	...	1.46
<b>Total, Fuel (under Manufacturing Expenses)</b>					<b>28.58%</b>

General Stores	...	...	...	...	...	...	...	1.70%
Electric and Machine Stores	...	...	...	...	...	...	...	0.09
Steel Material	...	...	...	...	...	...	...	1.70
Miscellaneous	...	...	...	...	...	...	...	0.03
Total, Supplies and Stores (under Manufacturing Expenses)								3.52%
Workmen	...	...	...	...	...	...	...	1.70%
Coolies	...	...	...	...	...	...	...	0.57
Contracted Labour	...	...	...	...	...	...	...	0.85
Total, Wages (direct and indirect labour)								3.12%
Total Cost (Excluding General and Financial Expenses, Depreciation, Transportation, and Power)								100.00%

### General Features Concerning Cost of Iron and Steel Production.

After a careful consideration of all the facts thus far given in this study, we come to the following conclusions:—

1. The labour cost in the manufacture of iron and steel is very insignificant, because Chinese labour is cheap but not inefficient.

2. Under "Manufacturing Expenses" two factors are especially noticeable, namely, fuel and depreciation. The depreciation charges are high because the plant is an old and expensive one with a low productive capacity. All fixed charges become heavy on a *pro rata* basis when production is low, which will not be so in the case of new plants. As to the cost of fuel in the manufacture of steel and steel products, it will be discussed more fully in a later connection.

3. General or administrative expenses are also low in Chinese factories, for the clerks and foremen receive very low pay. Only the chiefs of the departments and a few engineers are paid high salaries, and their number is small.

4. The financial expenses, in the case of Works A, are higher than they would be in other Chinese mills. The



Company is too heavily capitalized and burdened with debt, which, in that year, amounted to about \$30,000,000, bearing interest from six to eight per cent. per annum. Its total assets, on the other hand, were valued at \$70,000,000.

5. The largest item of cost in the production of pig iron, steel ingots, and steel products is raw materials. As pig iron forms the raw material of steel ingots, which in turn form the raw material of the steel products, we may say that pig iron forms the largest item of cost in steel production. This is really not far from the truth, as the table of Material and Labour Cost shows that pig iron, scrap iron, and steel together amount to 48.73 per cent. out of a total of 55.78 per cent. for raw materials in steel production. And when we examine the cost of pig iron production, we find that there, also, raw materials constitute 76.4 per cent. of total cost.

6. Coal constitutes a large cost item either as raw materials or fuel. As coke, it is used as raw material for the production of pig iron, and amounts to more than fifty per cent. of the total cost. In the production of steel products, coal and coke are used for fuel, and amount to 28.58 per cent. of total material and labour cost. And when we try to find out the high cost of coal and coke by comparing work A with Works B, we see that it is due mainly to the high cost of transportation, which also is responsible for the high cost of other kinds of materials. Hence, the cost of iron and steel production in China cannot be lowered unless there are better and cheaper means of transportation.

## VII.

### Development of Chinese Silk Weaving Industry.

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The silk weaving industry in China flourished as early as the Chow Dynasty (1122-220 B.C.), although Hwangti (黃帝), 2697-2596 B.C., was the first emperor to teach the people to raise silk worms. A fabric of raw silk known as *chuan* (絹) was at first the popular material for clothing, but now it is only used for painting, as Western artists use canvas. It is stiff and does not have a flossy surface. It is the simplest kind of silk fabric, and came into use first. Later, three kinds of silk were manufactured: silk, gauze, and crepe.<sup>a</sup> The plain, like that now produced in Hangchow and known as China, silk, is only a step advanced from raw silk, or *chuan*. It is known as *chow* (綢), and Hangchow silk is known as *fang-chow* (紡綢), or *Hang-fang* (杭紡).

In the Han Dynasty (206 B.C.-219 A.D.), a finer grade called *lin* (綾), resembling damask, was made. According to a book of anecdotes written in that Dynasty, the first manufacturer of this silk was named Chen Pao-kwang (陳寶光) and he spent sixty days in producing a single piece.<sup>b</sup> His product came to the knowledge of an influential nobleman after his death, and as his wife had learned his methods, she was summoned to the nobleman's mansion to manufacture the silk for the latter's private use. Gradually others

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a. 周禮內司服

b. 西京雜記

learned to make the same thing, and in the Tang Dynasty (618-906 A.D.) nine different varieties of *lin* were mentioned in historical records. The *lin* is still manufactured to some extent, but it is not so popular as satin, silk, gauze, crepe, or brocade.

Gauze came into popularity during the Six Dynasties (265-617 B.C.), when it was worn in all seasons of the year. Officials were required to wear black or red gauze robes in their offices, and black shiny gauze hats, such as are now seen on the stage.<sup>c</sup> Later it was only used as summer wear, and many different designs were woven into the gauze. There have been such names as *chan-yi-sha* (蟬翼紗), or *cicada wing*, characterizing the thinness and transparency; *hsiang-yun-sha* (香雲紗), or *perfumed cloud*, suggesting the draperies of the fairies living in the clouds; etc., etc. A variety of plain gauze without designs is still known as official gauze, a name which probably had its origin in the official robes worn during the Six Dynasties.

Another kind of silk fabric resembling grenadine is known in China as *lo* (羅). It has alternating knots and interstices. In a way, it also resembles mosquito netting, permitting freer circulation of air than ordinary silk. It is therefore suitable for summer wear. But the threads in *lo* are much closer than in mosquito netting, and the material is thicker. This material was generally manufactured plain, but in the Tang (618-906 A.D.), and Sung Dynasties (960-1276 A.D.) many varieties of *lo* with different designs were produced, such as peacock, the magpie, and the dragon. They were used for curtains, gowns, skirts, handkerchiefs, fans, and many other articles.<sup>d</sup> At present Hangchow is still well known for its *lo*. The material is used there mainly for clothing and bed curtains.

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c, d. 通考王禮考, 又中國工藝沿革史略

### Huchow, Important Silk Producing Center.

Huchow, Chekiang province, is a most important silk-producing center of China. It is best known for its silk and crepe. When they are woven with designs, both silk and crepe are known to the people in the industry as *san chih* (三織), or *three weaving*. Under that generic name are included all the following varieties: Chu-chien, Kwang-yi, Hang-yi, Chinchang, Chien-liu-chiu, Kia-kwo, Chin-hsien, Shun-shu, Er-chih-hwa-chien-liao, and Tu-hwa-chien-liao. e They may be explained as follows:—

*Chu-chien* (足尖), or “complete tip,” is the ordinary grade of silk, and is woven with a fine grade of silk fibre. *Hang-yi* (杭衣) is a superior grade of silk especially manufactured for consumption in Hangchow, which, being itself a silk-producing district, can produce enough silk of the ordinary kind to supply itself. *Kwang-yi* (廣衣) is midway between *Hang-yi* and *Chuchien* in fineness, and is intended for consumption in Kwangtung, Kwangsi, Yunnan and Kweichow provinces. It is almost as closely woven as *Hang-yi*, but is a little heavier, and therefore inferior. *Yi* means clothing, *Hang* means Hangchow, and *Kwang* means Kwangchow, the Chinese name for Canton.

*Chin-chang* (輕長), or “light and long,” is not much in demand in the south. It was originally intended to supply the imperial family in Peking, and therefore was also known as *Pei-kung* (備貢), or “for imperial consumption.” It was chiefly sold in the six Peking silk stores, each having the word *Hsiang* (祥) in its name: for instance, Chien Hsiang (謙祥) Chin Hsiang (慶祥), Lung Hsiang (隆祥), Jui Fu Hsiang (瑞蚨祥)—the last named being still the largest silk store in the capital. These stores, on account of the simil-

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e. 商業實用全書

group, and they supplied the imperial family with southern silk when the latter did not buy through its regular silk purchasing agents in the south. This grade of silk is said to be the highest of all manufactured in Huchow.

Between the *Hang-yi* and the *Chu-chien* in quality and intended for general consumption are *Hang-liu-chiu* (杭六九), *Yi-chien-liu-chiu* (衣尖六九), and *Chien-liu-chiu* (尖六九), in the order of their fineness. The *Kia-kwo* (加闊) is of three varieties, the widths being 1.9 feet, 2 feet and 2.2 feet, Chinese measure, where 1 foot is made up of 10 inches and is equivalent to about 1 foot and 1/3 of an inch in English measure. The first variety is about as good as *Kwang-yi* and is sold in Kwangtung and the south-western provinces. The second variety sells chiefly along the Yangtze Valley. The third is comparatively rare. *Kia-kwo* means "additional width."

*Chin-hsien* (緊線) and *Shun-shu* (順杼) are what foreigners call crepe. *Chin-hsien* means "tightened thread," and *Shun-shu* means "along the shuttle," both indicating that one group of threads is tighter than another, and produces wrinkles on the surface of the fabric. *Er-chih-hwa-chien-liao* (二織花件料) and *Tu-hwa-chien-liao* (獨花件料) are both manufactured to order only, as they are fabrics with patterns to suit the exact size of the coat or robe, and cannot be easily sold to the public. The difference between the two is that the former has many designs on all parts of the clothing, while the latter has just one pattern which covers the whole piece.

#### Crepe and Brocaded Silk.

Plain silk of the best quality is known in Huchow as *Yi-chih-pa-su* (一尺八素), a kind of crepe lighter than *Chin-*

*hsien* and *Shun-shu*. Next to it is *Liu-chi-chih-pa-su* (六尺八素), which is mostly exported to foreign countries, for it is even lighter than the first named. *Shun-shu-su* (順杓素) corresponds to *Shun-shu* of the former group, the only difference being explained by the word *su* (素), which means plain (no flowery designs). *Hwa-chi-su* (花機素) is not crepe, but ordinary silk, and is also lower in quality than the other kinds of plain silk. The lowest grade is *Er-i-wu-sen-su* (二一五生素), which is almost like raw silk, although a little heavier than it.

The above names are all used by men in the trade. To customers such classification is unknown, but the difference is reflected in the prices. There are also two grades of silk especially manufactured for sashes; namely, *Ping-chin* (平巾), and *Lien-ping* (連平), the latter being slightly wider.

The importation of the so-called *Ye-chi-ko* (野鷄葛) from Japan, a kind of flowery Japanese silk, suggested to the Huchow merchants the manufacture of a new variety of silk called *Hwa-ssu-ko* (華絲葛), meaning Chinese silk *ko*. The word *ko* (葛) originally stood for ramie textile, and the Japanese fabric is called *Ye-chi-ko* because it contains a mixture of silk and ramie fibres. *Ye-chi* means not of standard quality. *Hwa-ssu-ko*, on the other hand, contains no ramie at all, but the designs have a flossy appearance like the Japanese material, different from other kinds of Chinese silk, and so it is also called *ko*. In fact, it is brocaded silk, because the background is silk, while the designs are like brocade, though usually of the same color as the background. It is woven on modern Jacquard looms.<sup>f</sup>

Varieties of *Hwa-ssu-ko* are known as *Su-chih-lo*, *Hwa-chih-lo*, *Shwang-ssu-ko* and *Wu-hwa-ko*. *Su-chih-lo* (素直羅) is silk that looks more or less like *lo*, mentioned in a former

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f. Personal investigation.

paragraph, and *Hwa-chih-lo* (花直羅) has more flowery patterns. Both are of the same grade. *Shwang-ssu-ko* (雙絲葛) is heavier than *Hwa-ssu-ko* or *Su-chih-lo*, and usually also wider. It was most popular in China last year. This year the latest fashion is *Wu-hwa-ko* (物華葛), meaning *ko* manufactured by the Wu-hwa Silk Mill. The patterns are newer and more shiny.<sup>g</sup>

Pu-yuan (濮院鎮), a small town in the district of Tung-hiang, (桐鄉) Chekiang, produces also *San-chih*, but it is inferior to the silk of Huchow, and is mainly sold to the people of Shensi, Shansi, Shantung and Chihli. In the south the only use made of it is by the clothing stores for ready-made clothing, because it is cheap. These stores also use a very low grade of Huchow silk known as *Chih-wu-wu-hwa-chow* (尺五五花綢), for the same reason. A higher grade manufactured at Pu-yuan is *Kia-kwo-sze-chih* (加闊四織), but even that is inferior to ordinary Huchow silk.

The laborers in the modern silk mills of Huchow are mostly natives of Tanyang (丹陽), Kiangsu (near Chinkiang). More than fifteen years ago, this city also produced a kind of *San-chih* (i.e. silk and crepe) which, however, was of an inferior quality. But the people there are accustomed to silk weaving, and hence many of them work in the Huchow mills. Five years ago, however, Tanyang began to produce a fine grade of *San-chih*, with many new designs, and it became a strong competitor of Huchow as a silk-manufacturing center. To show this spirit of competition, the Tanyang merchants called their best silk *Kwan-hu*, (冠湖) meaning "better than Huchow."<sup>h</sup>

#### Honan and Shantung Silk.

Another rival was the city of Nanyang, Honan. It

g. Personal investigation in 1924.

h. 商業實用全書

is a wild silk producing center. Pongee silk was manufactured there as early as the beginning of the nineteenth century. Around 1860, however, a native of Tientsin named Yin Ju-pi (殷汝璧) became the city magistrate. Yin came from a family which had long been in the silk business, and he taught the people to improve their silk fabrics. In a few years, the business flourished, and large quantities of Nanyang silk began to be sold in other provinces. Hence Nanyang (南陽) silk is sometimes also called Yin silk (殷綢).

Nanyang also produces a kind of silk similar to the China silk of Hangchow, known as *Pa-ssu-chow* (八絲綢), or silk of eight threads. Its width is from 1.4 to 1.6 feet, Chinese measure, and its length 60 to 90 feet. Its color is white, blue, or gray, but never bright red or green. There were at one time over 700 families in Nanyang weaving this kind of silk, employing over 3,000 looms and producing about 1,000 pieces daily.

Since the wild silk produced in the district is not fine enough for high grade fabrics, the Nanyang weavers combine it with silk imported from other cities, of which that of Luan and Yangcheng, Shansi province, is the best, that of Tsaohsien, Shantung and Teian (德安), Hupeh province, is of the second grade, while that of Chechwan (浙川) and Mihsien, Honan, is the lowest. The large weavers usually have sales managers in the different provinces, but the fabrics are sold in Mongolia, Japan and other places through purchasing agents and exporters of other provinces.

Chenpingsien (鎮平縣), 70 *li* west of Nanyang, produces similar fabrics, but of a lower grade. About 120 *li* north of Nanyang, Nanshao (南召) produces *Chu-ssu-chow* (取絲綢), which is a kind of pongee, and is sometimes more popular than Nanyang silk. Kaifeng is known for the so-



called Honan silk, but it is of a very inferior quality from the Chinese point of view, although like Shantung pongee, it is widely used in making foreign style shirts and suits.

Shantung pongee is woven from wild silk from the cocoon of the tussock moth. Its width was originally only 1.4 feet, but has been increased to a maximum of 2.2 feet. It is lighter than Honan pongee, and has a better market. The first process in manufacturing pongee is to strengthen the silk thread, which is done with *tu-feng* (土粉), a kind of white powder found extensively in Mongolia and north China, and bean curd. These remove the soda substance from the silk, and make it cleaner, stronger and more flossy. The weight is, however, increased by 10 or 20 per cent through strengthening. As the original silk is grayish yellow in color, it is often bleached, yielding a very light yellowish-white fabric.

Chefoo is the principal market for this pongee. The silk was originally produced in Shantung, but now the tussock moth is extensively raised in South Manchuria, through immigration of Shantung people into those provinces, and Manchuria supplies Shantung with a large proportion of the raw material. As early as the first part of the reign of Tung-chih, Manchu Dynasty (1862-1874 A.D.), Shantung pongee began to be exported to Europe and America, but the business received a strong impetus in 1885, when Shantung manufacturers established special exporting agents in Hongkong and other treaty ports. After another decade, direct exportation through Chefoo and Tsingtao became the rule. According to a statement of the Shantung and Honan Pongee Silk Association, the trade in 1885 was valued at only half a million dollars, but the Customs Reports show that it had grown to more than 13,000,000 Haikwan taels in 1921, although it dropped again

to 8,700,000 taels in 1922. (One Haikwan tael is equivalent to about U.S. \$0.75 or 3 to 4 shillings sterling).

Chowtsun (周村) in Shantung has 15 silk weaving mills with 85 modern looms and 350 to 470 workmen. Small workshops number over 100, having about 500 looms among them. The principal product is *Hwa-ssu-ko*, similar to that manufactured in Huchow, Chekiang. The silk fiber usually comes from Ishui (沂水) or Mongyin (蒙陰), but sometimes finer silk from Sintai (新泰) is also used. All three cities are in Shantung. The weavers are generally paid by the piece, being about 150 coppers each piece, and as one man can weave one piece in two days, he can earn 2,250 coppers or about \$10 to \$12 in a month.<sup>1</sup>

#### Hangchow Silk.

Hangchow is best known for its China silk. The most popular variety is known to the traders as *Sze-chwan-kia-chung* (四串加重), *i.e.*, extra heavy No. 4. A slightly inferior grade is called *Liu-chwan* (六串), or No. 6. *Kia-kwo-fang* (加闊紡), or "extra wide silk," 1.8 feet in width, is not very common, and it needs special looms in weaving. Shao-hing (紹興), Chekiang, now competes with Hangchow in the production of such silks, and the village of Pan-kiao (板橋) in that district produces a very high grade, known as Pan-fang (板紡).

*Lo*, a kind of grenadine, is another important product of Hangchow. At first an interstice was made between every five threads in the woof; later, between every seven or nine threads; but recently thirteen threads are woven in the woof before an interstice is made. It is all plain, except for the interstices, while formerly patterns were also woven into the fabric. An extra wide variety of *lo* is not very popular.

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1. At the rate of exchange in 1924.

*Hsien-tsun* (線春) is a fabric of raw silk. It is very strong and can stand much wearing, but not very flossy, and both color and patterns are not attractive. It is now seldom worn outside, but may be used for underwear. Another kind of raw silk fabric is called the "iron loom silk," sometimes "brocaded silk," and it resembles *Hwa-ssu-ko* described some paragraphs back. *Hsien-tsow* (線綉), *Ning-chow* (甯綉), and *Kung-chow* (宮綉) are manufactured from "boiled off" silk, some with patterns and some not. *Ning-chow* has a larger variety than *Hsien-tsow*, and *Kung-chow* is similar to the former, but a little inferior.

Of the different kinds of gauze manufactured in Hangchow, *Tsun-sha* (春紗 "spring gauze"), *Tieh-chi-sha* (鐵機紗 "iron loom gauze"), *Hang-kwan-sha* (杭官紗 "Hangchow official gauze"), *Hwa-kwan-sha* (花官紗 "flowery official gauze"), and *Chan-yi-sha* (蟬翼紗 "cicada wing gauze") are all made from raw silk. *Tsun-sha* is of two varieties: one plain and the other having a large number of knots which resemble linseeds, and is known as "linseed finish." *Hwa-kwan-sha* has two similar varieties, and although it has patterns besides, they do not stand out prominently and are called *An-hwa* (暗花), or "hidden pattern." The designs on *Chan-yi-sha* are also hidden, but the background is very flossy and bright, and offers a beautiful contrast.

From prepared silk five kinds of gauze are manufactured; namely, *Shih-ti-hwa-sha* (實地花紗), *Tze-ti-hwa-sha* (芝地花紗), *Hwai-ti-hwa-sha* (槐地花紗), *Tze-ti-su-sha* (實地素紗), and *Hwai-ti-su-sha* (槐地素紗). *Shih-ti* means plain background. *Tze-ti* is linseed finish, and it may have patterns (*hwa-sha*) or may have none (*su-sha*). *Hwai-ti* is another kind of background where the knots are bigger than in *Tze-ti*, and this kind of gauze may be either *hwa-sha* (with designs) or *su-sha* (without designs). *Shih-ti*

*hwa-sha* is sometimes also known as *Ping-sha* (平紗). Gauze from "boiled off" silk is sometimes also woven on modern looms, and is then called "iron loom gauze."

Shengtsecheng (盛澤鎮), in the district of Wukiang (吳江縣), Kiangsu province, produces even a larger variety of silks than Hangchow, though it may not be so well-known to foreigners. *Four-eight-fang* (四八紡) is woven after a Japanese model, known in China as *Tung-chow* (東綳), but it is done on modern looms, while the Japanese *Tung-chow* is manufactured with wooden ones. There are two grades of *Four-eight-fang*, and below them is *Siao-fang* (小紡), or small China silk, manufactured on wooden looms, and used only for summer underwear. When *Four-eight-fang* has patterns, it is known as *Sze-pa-hwa-fang* (四八花紡), and is classified into *Kwangchwang* (廣莊), for consumption in Kwangtung and other southern provinces, *Ti-chien* (提尖), best grade, and other grades.<sup>1</sup>

#### Sunset Silk and Fragrant Cloud Gauze.

*Lo-fang* (羅紡) is a combination of *lo* and *fang*, or China silk. Many varieties of it are manufactured in Shengtsecheng. *Hsien-lo-fang* (線羅紡) is a silk and cotton union where the cotton threads stand out in the fabric and make it look like *lo*. It is very popular as material for summer wear, because it is soft, yet will not cling to the body as pure silk does. The color may be white, blue or variegated. When the cotton threads run horizontally instead of lengthwise, it is known as *Heng-tiao-hsien-lo-fang* (橫條線羅紡), or horizontal threads *lo-fang*. In *Ssu-hsien-lo-fang* (絲線羅紡), the horizontal threads consist alternately of one silk and one cotton thread, and the fabric is of white, light blue, and other light colors. *Ssu-lo-fang*

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1. 商業實用全書

(絲羅紡) and *Ko-fang* (格紡) are two other varieties of cotton and silk unions.

When the silk has a satin finish, it is called *Hwa-twan-tiao-fang* (花緞條紡 with flowery patterns) or *Su-twan-tiao-fang* (素緞條紡 plain) by the people in the trade, but to the customers it is known as *Yi-hsia-chow* (綺霞綢), or "sunset silk." A new variety, known to the trade as new *Hwa-twan-tiao-fang*, is called by outsiders *Pao-kuang-fang* (寶光紡 sparkling silk). The background sometimes contains round spots, and the silk is then known as *Tien-tze-twan-tiao-fang* (點子緞條紡). If there are slant lines on the fabric, the natives of Shengtsecheng call it *Hsia-wen-twan-fang* (斜紋緞紡), while the Shanghai people call it *Ssu-chang-chow* (絲搶綢).

Shengtsecheng also produces gauze of the Kwangtung type, known as "fragrant cloud." It produces a kind of *Hwa-Puyuan* (花濮院), similar to the silks of Puyuan mentioned under Huchow, and is used for linings. *Hwa-chieh-chow* (花界綢) is used for the same purpose. *Su-chow* (素綢), which was formerly occasionally used for gowns and robes, is now not even used for lining, because it is too plain. A variety of it, called *Chih-sze-su* (尺四素), is mostly sold in Manchuria. *Su-lin* (素綾) is of an even lower grade, some of which is manufactured especially for dressing the dead. *Lo*, manufactured from raw silk, is of many kinds, of which *Chiu-lo* (秋羅) and *Hwa-chiu* (花秋) are intended for consumption in Kwangtung and other southern provinces, while *Chih-sze-lo* (尺四羅) and *Wu-er* (五二) are for use as lining. On the whole, the raw silk fabrics of Shengtsecheng are inferior to its "boiled off" silks, as well as to the raw silk fabrics of Hangchow.

Soochow is better known for its embroidery than for its silk, but of the latter it also produces a considerable quan-

tity. There are Soochow crepe and Soochow silk, but both are now rather unpopular, because they are inferior to similar Hangchow goods. Its gauze was once an important item of trade, and a special kind was manufactured for summer underwear, known by the beautiful name of *Fu-yung* gauze (芙蓉紗). *Fu-yung* means the Hibiscus flower, a very beautiful blossom of China often mentioned in poetry.

Chinkiang has also silk and crepe, which are used in place of Soochow silk and crepe, but in fact they are inferior to the latter. Ningpo produces *Wen-chow* (文綢) similar to the *Hwa-fang* of Shengtsecheng. Much improvement has been made in the manufacture of this product, and two varieties, woven with stripes and squares, are very popular with the Ningpo people.

Kasing (嘉興) in Chekiang produces *Hsin-sha* (興紗), sometimes known as treading gauze" (腳踏紗). It is used mainly in making women's skirts. However, since the "iron loom" gauze of Hangchow and Shengtsecheng came in vogue, the Kasing gauze has been practically driven out of the field. Many other cities in Kiangsu and Chekiang manufacture silk fabrics, but few except Nanking, which will be referred to later, can compare with those already mentioned. In fact, even among those above mentioned, the silk business chiefly centers around Huchow, Hangchow, and Shengtsecheng, the rest being of minor importance.

#### Satin, Brocade and Tapestry.

Satin was first manufactured in the Han Dynasty (206 B.C.-219 A.D.). Mention was first made of it in the Four Poems of Sorrow, by Chang-heng (張衡), a well known poet of that dynasty. In the Tang Dynasty, the Government weaving mills did not include satin among its record of products, but private manufacturers of certain districts

were supposed to supply the imperial family with this material.<sup>k</sup> The greatest popularity was gained by satin during and since the Ming and the Manchu Dynasties (1368-1911 A.D.). Nanking, Soochow and Hangchow then became the centers of this industry. The satin of Nanking was originally manufactured for consumption by the imperial house, and was therefore known as *Kung-twan* (貢緞), or "tribute satin." Soochow followed the example of Nanking and produced a heavier variety, called *Lwei-twan* (累緞). Hangchow again improved on the product of Soochow, weaving beautiful designs into the fabric, and called it *Hwa-twan* (花緞). Changchow, Fukien, produced a kind of satin after Japanese pattern, and it was known as *Chang-twan* (漳緞). It was something like brocade, but the background was shiny while the designs had a velvet finish. It was very popular some twenty years ago, but is now seldom seen on the market.

As to brocade, it had an early origin, too. It was first produced in the Hsa Dynasty (2205-1782 B.C.), when three kinds were distinguished: those with a plain background called plain brocade, those with a red background called red brocade, and those completely covered with patterns called *Chih-chen* (織成).<sup>l</sup> During the Chin (221-205 B.C.) and Han Dynasties, the officials were distinguished as to their ranks by the patterns they wore on their brocaded coats. Later, Szechwan became well known for its brocade, but the industry lost its foothold there since the Yuan Dynasty (1277-1367 A.D.) In the Sung Dynasty (960-1276 A.D.) the weavers of brocade were able to weave landscapes into the fabrics, and the work was so exquisite that it looked more like natural landscapes than similar embroidered designs.

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k. 中國工藝沿革史略

l. 中國工藝沿革史略

With the use of Jacquard looms, hand-made brocade lost its popularity, and the center of production of brocaded silks and satins was shifted to Hangchow.

Similar to brocade is tapestry. It had a very early origin in China, but did not become well known until the Sung Dynasty. There are still many specimens of the tapestry of that period, while modern ones can be made at Soochow even at the present time. The following is an account of satin manufacture during recent years.

#### Nanking Satins.

The satin for which Nanking is famous is *Kung-twan*, or "tribute satin." It is plain and dyed black, and is used for making formal dresses. Similar material is manufactured elsewhere, yet the color of the Nanking *Kung-twan* is the best, for it does not turn yellow with wearing, but on the contrary, gains in lustre. This is supposed to be due to the water of the poetic Chin-hwai River (秦淮河), which seems to be a good fixer when used in making dyes. The warp usually consists of silk from Siashih (峡石) or Tangki (塘溪), Chekiang, while for the woof local silk is used. The market of the satin is mainly in the northern provinces, where dark colors are generally preferred, but in the last few years the demand slackened a good deal, because other material, such as black brocaded Hangchow satin or imported henrietta, is used in its place in making formal dresses. The largest manufacturers now seldom have more than 100 looms. The different varieties of *Kung-twan*, the number of threads in the warp and the width of the pieces are as follow:—



Variety	Threads	Width of Piece
Ku-twan (庫緞)	18,000-22,000	2.9-3.1 feet Chinese measure
Chin-su (綵素) or Ta-chin (大綵)	15,000-18,000	3.2 feet
Hsueh-su (絳素)	15,000-16,000	2.7 feet
Hung-shu-tang (洪書堂)	9,000-13,000	2.7-2.9 feet

Besides *Kung-twan*, Nanking also produces *Hwa-twan*, i.e., satin in colors and with designs. During 1914 and 1915, a variety of Nanking *Hwa-twan*, known as "three color *Hwa-twan*," was very popular. Sometimes, the background was blue, and the patterns were white, with light blue shading around. Sometimes a different combination of three colors was used. But the material was not as strong as *Kung-twan*, the designs were not as beautiful as those of Hangchow satin, and consequently it could not compete with either. At present very little Nanking *Hwa-twan* is sold in such fashionable cities as Peking, Tientsin, or Shanghai.

Changchow satin, mentioned in a foregoing paragraph, had its counter-part in Nanking. In fact, after the Changchow people had forgotten how to manufacture that kind of satin, Nanking produced large quantities of it and became well-known for this product. At the same time, Changchow velvet was also manufactured in Nanking, as well as ordinary velvet. The best grade of the latter is "goose velvet," which is very flossy and soft. Changchow velvet is heavier and stiffer, while Changchow satin has a velvet appearance only in its patterns.

The best grade of Soochow satin is *Lwei-twan* (累緞), either plain or with design, but best plain. *Lwei-twan* is only equivalent to the second grade Nanking *Kung-twan*. *Tieh-chi-twan* (鐵機緞), woven on modern looms in Soochow, is generally inferior to Hangchow satin. It may be pure silk

or silk and cotton union; it may be regular or iridescent. The names of the different varieties are very beautiful, but do not tell anything about the quality of the product. For instance, they are called by such fancy names as *Yi-hsa-twan* (sunset satin 綺霞緞), *Yun-kwang-twan* (bright cloud satin 雲光緞), and *Yueh-hwa-twan* (moon light satin 月華緞).

Soochow also produces single piece bed-spreads with special patterns to fit the sizes. It makes satin trimmings, interwoven with imitation gold and silver threads. Many kinds of velvet, including Changchow velvet and Changchow satin, are also manufactured. A particular variety, with white spots on a black ground, has been very popular as lining for Chinese collars. Other colors are also used for such collar velvet to match the colors of the robes. A special kind of satin with a silk or gauze finish is intended for consumption in Korea, and it is known under such names as *Shih-ti-su-ku-twan* (實地素庫緞), *Chih-ti-hwa-ku-twan* (芝地花庫緞), etc. It appears as if the Koreans, whose costume resembles that of the Chinese many centuries ago, and who were in fact in close relation to China at that time, had taken a special liking to gauze, which was very popular in China during the Six Dynasties, and that taste has survived to the present time.

#### Introduction of Jacquard Looms.

The Jacquard loom was first used in this country by Sze Ho-chu (施鶴初) of Hupeh, who started in 1908 or 1909 a silk weaving mill in Hankow, called the Chao-sing Mill (肇新).<sup>m</sup> In 1911 and 1912, similar mills began to spring up in Hangchow, where the silk supply is abundant, and Wei-chen (緯成), Hu-lin (虎林), Chin-chen (慶成), Jih-sin (日新), Cheng-

<sup>m</sup>, 中國工藝沿革史略

sin (振新) and many other modern mills came into existence. According to some silk merchants, there are now over 4,000 Jacquard looms in Hangchow, and about 3,000 in Huchow, which are used in manufacturing brocaded silk and satin. The old Hangchow satin (*Hang-twan* 杭緞) and "flowery satin" (*Hwa-twan*) have now been entirely replaced by the new varieties woven on the new looms, and in the manufacture of satin, as of silk, Hangchow stands first among all the producing centers.

In regard to the widths given above it must be remembered that different measures are used in different localities. In the silk trade, one Shanghai foot is about 9.8 inches of the so-called standard foot, Hangchow, 9.7 inches and Soochow, 9.5 inches. One foot is equivalent to ten inches in Chinese measure. The Kwangtung foot is half an inch longer than the standard, and therefore from 0.7 to 1 inch longer than that of the other cities. The tailor's footstick again differs from that of the silk merchants, hence no accurate comparison can be made between the widths and lengths of silk piece goods of different localities, and it is therefore not attempted in this account.

The grading of silk is made by Chinese merchants according to the fineness of the silk fiber and the weight and strength of the fabric. Hence, what is considered as inferior silk by them may not be inferior in the eyes of foreign consumers. In fact, foreigners buy more of Shantung pongee and thin Hangchow and Huchow silk, both of which are not supposed to be high grade in China, while high grade Chinese silk and satin are often useless in making foreign dresses. With all these facts in mind, the meaning of the above account will be better understood.

Another remark must be made concerning this. Although under each city a number of silk fabrics are

mentioned, it does not mean that these alone are produced in that city. They are given special mention because the city is known for these products, or because in the mind of the Chinese silk merchants its name is usually associated with their production. Some fabrics are mentioned merely on account of their historical interest, and they are now no more manufactured. Some of the names have changed too; consequently this study cannot be taken as the final word on the subject.

