

THE INDUSTRY AND TRADE OF JAPAN

S. UYEHARA

P. S. King & Son, Ltd.,
Publishers.

Established in 1849
PARLIAMENT STREET.

Orchard House,
Westminster, S.W.1.

January 13th. 1927.

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**.THE INDUSTRY AND
TRADE OF JAPAN**

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BY
S. UYEHARA, M.Sc.

LONDON
P. S. KING & SON, LTD.
ORCHARD HOUSE, 14 GREAT SMITH STREET
WESTMINSTER
1926

X:54·42·N26

FG

5216

Printed in Great Britain at
The Mayflower Press, Plymouth. William Brendon & Son, Ltd.

PREFACE

THERE are many books on Japan. For a long time, however, the world knew her only as the land of artists and of the quaint people portrayed in stories such as "Madame Chrysantheme." It was not until recent years that Japan became recognizable to the outside world in political and economic affairs. Many books relating to these affairs have been published in English and read with keen interest. Nevertheless, there is a lack of authoritative information regarding the economic development of present-day Japan, who is so much over-estimated by some and under-estimated by others owing to the lack of proper information.

Japan's future lies along commercial and industrial lines. The purposes of Japan are peaceful, and look to the development of markets and the employment of her ever-increasing population.

The object of this thesis is to provide an authoritative account of the industry and trade of Japan for the past half century, during which period Japan has achieved remarkable progress. I have tried especially to lay stress on the industrialization of Japan and also to emphasize the present industrial stagnation.

The difficulty of collecting material for the work was not small. Fortunately the official year books of the Departments of Finance and Commerce of the Japanese Government, which are kept in the library of the Imperial Japanese Consulate-General, London, and the *Oriental Economist*, one of the best economic journals in Japan, rendered me great service in compiling the thesis. All statistics, other than those which are otherwise referred to, are taken from the Teikoku Tokei Nenkan (Imperial Year Book of Statistics).

It must be added that a great part of the section on "Representative Industries" was suggested by various articles in the *Oriental Economist*.

At best the thesis must be considered as a rough one, to be improved and enlarged later not only on the subjects which are principally dealt with, but also on such topics as labour and agricultural conditions of Japan. Nobody can be more aware of omissions and faults than myself. But as it stands, I venture to claim that this thesis provides an account of Japan's industrial and trade development during the last fifty-seven years which is not otherwise readily obtainable.

S. UYEHARA

20, BASSETT ROAD,
NORTH KENSINGTON, LONDON, W. 10.
July 5, 1925.

INTRODUCTION

BY HIS EXCELLENCY BARON HAYASHI,
JAPANESE AMBASSADOR TO THE COURT OF ST. JAMES

IN his preface the author has set forth the motive which actuated him in preparing for the benefit of British readers this exhaustive account of the development of Japanese industry and trade since the Restoration of 1868. But he has modestly omitted to mention a further object which he might have claimed with good reason to have accomplished. He has said nothing of the good work he has performed in endeavouring to increase the mutual understanding and goodwill which has so long existed between the island nations of the East and the West. For to my mind this purpose is admirably served by the provision of information such as the author has here collected. To know a friend's difficulties and struggles is to appreciate his achievements or to commiserate his failures. It is for this reason that I particularly commend Mr. Uyehara's record of my country's economic development to the sympathetic perusal of the British public.

HAYASHI

LONDON,
July 22, 1925.

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The Industry and Trade of Japan in Modern Times

PART I

INTRODUCTION

THE MEIJI RESTORATION AND HALF CENTURY FOLLOWING

HAVING passed through the long period of isolation during which nation and people were barred from foreign intercourse, Japan began the most illustrious epoch in her development after the Meiji Restoration¹ of 1868. Japan was successful not only in the stupendous task of reorganizing her institutions on Western models and introducing many of the features of modern civilization, but also in adopting Western economic and financial methods in every line of business, by which the national economy of Japan has been completely altered. It was a renaissance in the economic as well as in other spheres of national life. The study of economic development since the Restoration is worth more than that of the whole of the rest of Japanese history from the modern industrial point of view.

Downfall of Feudalism.

In England feudalism was abolished during the reign of Charles II, and it was not until the great Revolution that it

¹ The Meiji Restoration. Japan had been governed by the Shogun² under the name of the Emperor for more than four centuries before 1868, when the Shogunate administration ended and power was restored to the Emperor again. The Restoration resulted in an epoch-making change in the political, social and economic development of Japan. We therefore call this notable period the Meiji Restoration after the name of the Emperor Meiji.

² The Shogun was the title of the militaristic ruler who administered Japan and who originated from the Minamoto Family in the 14th

was ended in France. However, in Japan it was the dominant social and political system up to the middle of the 19th century. In fact, Japan was the last country in the world that abolished feudalism.

In 1868, the Shogun, *de facto* sovereign, gave up his political and military power to the Mikado, *de jure* sovereign, and feudal lords or daimyos returned their rights and privileges in their domains to the Emperor. Thus, the Emperor regained the old authority of his dynasty and the new Imperial Government was promptly formed with possibilities for rapid expansion and prospective growth. At the same time all other feudal institutions were abolished. The country was open to foreign intercourse and Western civilization was introduced. Things were greatly and rapidly changed in the political, social and economic life of the nation.

Why had the Shogun to retire behind the scenes of the political stage? Why had the old mediæval institutions to come to an end? These questions are the most interesting subjects in Japanese history. It may be said that the main cause of the Great Restoration of 1868 was the fact that the decay of the Shogun's old prestige had become known to the people since the occasion when an allied force of the Western Powers menaced Japan at the middle of the 19th century, on the ground that she would not open her ports to foreign commerce and intercourse. The Shogun who had kept the great suzerainty for centuries—who had never yielded to the pressure of public opinion—showed himself entirely powerless to control the people as to whether the country should be open to foreign countries. Some lords opposed the open-door policy against the Shogun, some supported it. Agitation against the Shogun was widely prevalent. The malcontents did not hesitate to take arms. The Shogun's orders were thus entirely ignored, and grave disturbances followed. Internal affairs were almost at the

century. From about the middle of the 15th century a state of anarchy prevailed and the Shogun completely lost his prestige. Tokugawa Iyeyasu, however, succeeded to the title again and established the Tokugawa Shogunate at the beginning of the 17th century, which lasted over two centuries and a half until the new Meiji era was established in 1868.

climax of commotion. Thirty years before the Meiji Restoration was an age of intrigue, uneasiness and terror. At the time of national peril, the Government of the Tokugawa Shogun then in power concluded the commercial treaties with the Western Powers without the sanction of the Emperor. This raised immediately a determined challenge among the loyal feudal lords. The defeat of the Shogun in civil wars forced him to surrender his régime to the Emperor. Thus, the visits of Western countries and the powerlessness of the Shogun were apparently the combined causes of bringing the new era to Japan.

Nevertheless, what we must not overlook is the extremely distressed economic state in which Japan was placed at that time. The menace of Western Powers could not cause such a dramatic change without internal economic disturbances. Feudalism would have continued much longer if the economic affairs of the country had allowed the people to be better off than they were before. We can imagine no modern revolutions having occurred without relation to economic factors. As we open the pages of the history of Japan of the 19th century, we are forced to the conclusion that a great change in the national life of the country was bound to take place sooner or later, owing to the economic distress prevalent at that time. At the beginning of the century the deterioration of the nobles and the moral decay of the upper class were at a climax ; farmers especially were reduced to absolute misery and poverty owing to excessive taxation and their slavish position. There was then no equality and freedom, no complete safety of life and property. Great barriers divided the classes. Even an ordinary Samurai (professional warrior class) could not see his chief, and could never have audience with the Shogun. The common people had to kneel and bow so low as to touch their foreheads on the ground whenever they met a procession of feudal lords. The commoners had no right of appeal against unlawfulness, inhumanity and tyranny of classes higher in the social scale. It was not an uncommon thing for them to be whipped if they failed to pay heavy taxes. The revenue of the State was mostly raised from rice fields and

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farm lands during these days ; therefore the farmers, who were taxed both by the Shogun's Government and by the feudal lords, were the main sufferers. Bad harvests occurred in succession and plague often visited the country during the distressed period. In spite of this, the expenditure of the Government continued to increase owing to their vast waste of money and the general extravagance of the nobles. The debasing of coins by the Government for the purpose of balancing the deficit in the revenue, and the depreciation of the paper currency issued by the feudal lords—there were 1694 kinds of local currency in circulation before the Restoration—eventually caused a rise in the prices of commodities. At the same time the feudal lords imposed more taxes for the purpose of their extravagance. As mentioned above, taxes were then chiefly levied on rice fields and were collected in rice.¹ Farmers who had to pay taxes by a fixed quantity of rice were greatly distressed by the rise of price. They had nothing left after paying the taxes and were unable to buy the other necessities of life.

Those who received the taxes in form of rice increased their incomes owing to the rise of prices, and immorality and decadence became rife. Thousands of farmers threw up the spade and plough and came to the towns in order to be free from the fetters of heavy taxation. During the first decade of the 19th century the population of the farmers decreased by 1,400,000, owing to death by misery and poverty and also to their removal to towns, which were full of undesirable and unemployed Samurai. The towns were congested with thousands of workless people and great uneasiness was prevalent in the country. Riots occurred in various districts. In the meanwhile Western ideas had been gradually introduced through the Dutch traders. The Government could not show their old despotic dignity. Feudalism was everywhere in decay, and the downfall of the Tokugawas was rapidly approaching after three hundred years of isolation, which had been imposed for their safety.

¹ The unit of measurement for purposes of taxation was then a koku of rice, one koku being equivalent to five bushels.

The revolutionary atmosphere was eminently significant. No reforms could be attained without the abolition of feudalism at that time. There was no reason why the majority of the people should suffer in order to keep a few of the higher class in extravagant diversion. There was no reason why high administrative position should be hereditary. The ideas of liberty and equality were spreading. It is obvious that the orders of the Tokugawa Government had no effect on the people. Despotic policies based on feudalism were seen to be absolutely inapplicable for the national welfare from the economic point of view; the time was ripe for a great national change. At this grave period "the people were awakened by the sound of cannon balls fired from the American flagship in the bay of Uraga."¹ The country was at once thrown into confusion, and the downfall of feudalism was brought about. It was not merely a restoration of the Imperial régime, it was also the inauguration of modern capitalism.

Dawn of the New Era.

The outworn institutions of the feudal régime, no longer capable of maintaining the welfare of the people, had necessarily to be replaced by modern ideas. As soon as the Imperial régime was restored, many reforms and changes were successfully undertaken in the political, social and economic spheres. There was no more absolute government; the new Government consisted of three departments, under one supreme Sovereign, namely, the legislature, the executive and the judiciary. The army was reorganized on the German system of universal military service. The country was divided into more than forty administrative prefectures, and the old feudal domains were abolished. The feudal lords received compensation from the Government in the form of national bonds in proportion to their feudal incomes. To the Samurai the Government also gave an annuity in money and bonds. These amounted to about yen 35,000,000. The new financial system was secured at that time, though it

¹ From Prof. Sato's *Some Historical Phases of Modern Japan*.

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remained in difficulties for the first decade of the Meiji era. Modern institutions replaced those of feudalism.

Apart from those formal institutional changes, we have to notice the psychological changes in the mind of the new era, which are revealed by the following Five Principles.

The spirit of the Restoration can be clearly observed in the Five Principles formulated in the Oath sworn by the Emperor Meiji, and which are well known in Japan as the "Gojo-no-Goseibun." The Oath was pronounced on the 14th March, 1868, and was an indication of the way in which the new Japan was developing.

The Gojo-no-Goseibun.

- (1) Public meetings shall be allowed. National affairs shall be administered for the benefit of the nation.
- (2) Rulers and ruled alike shall devote themselves to the good of the nation.
- (3) All the civil or military officials shall endeavour to encourage individual industries of all kinds, and to promote the activities of the people according to individual ability.
- (4) Moral and social defects in the nation shall be remedied.
- (5) Useful knowledge shall be introduced from the outside world, and thus the foundations of the Empire shall be strengthened.

Following this, new laws were introduced, the old feudal system of privileges was abolished and all people were considered of equal standing—there was no discrimination between classes. People were free of all the restraints which had formerly existed. The most significant thing which occurred after the Restoration was, however, the progress which was made in the economic sphere. Industrial methods employed in Europe were introduced into Japan in rapid succession. In the intervening time from the feudal to the modern era Japan had to go through a period of economic confusion, in order to reform the old economic system, and to adopt at the same time new Western methods.

Economic results following directly on the Restoration were (1) free competition and the entry of the Samurai class into commerce; (2) greater utility of capital and more economic distribution of industries in consequence of the opening up of foreign trade.

The abolition of feudal privileges and the establishment of equality brought about the fundamental reorganization of the economic system. Before the new era was begun, trade and industries could not be engaged in by those who did not belong to the guild or "ZA." The number of the "ZA" and the number of members in them were limited by the feudal lords. The purchase or transfer of land was strictly prohibited or restricted, consequently utilization of land as capital was totally impracticable at that time. The right to select an occupation according to individual ability and the right to freedom of movement were not often allowed. Both the Shogunate Government and local feudal Governments had not only the exclusive power to take whatever products in their domains might be necessary, but they also continually interfered with individual enterprises. It can therefore be understood that in those days free competition did not exist and progress was impossible.

After the Restoration, however, these restrictions were removed and replaced by freedom of occupation, the complete recognition of private property (including property in land), which enabled individuals to sell, transfer and purchase at their discretion without interference. Trade and industries formerly kept only for privileged persons were now placed under free competition. As a consequence there was great confusion. Many wealthy and well-known families, which had depended upon their older privileges, collapsed amidst the sudden social change, and, on the other hand, men rose from practically nothing to be the possessors of great wealth. A noticeable thing during this chaotic period was the position of the Samurai class, which numbered half a million at that time (or two million including dependents and families). They were soldiers and belonged to their respective lords, living on an hereditary pension. They were kept as fighting soldiers for unforeseen

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emergency, and had practically nothing to do with actual business. Therefore, they were very ignorant of business affairs, and were rather proud of this, as they regarded trade as a most humble occupation and as being something in which they should not engage. The "Hyakusho" (farmers) and the "Chonin" (merchants) had to deal with these matters for the Samurai. So long as the Samurai could live on the feudal pension, they could afford to retain this peculiar idea. However, after the Restoration they suffered immense difficulties in the conditions of living, as they had no experience of business and the feudal pension was then stopped altogether. Although the system of pensions was abolished, loans were granted to the Samurai, according to their respective ranks, and for a long time after the Restoration they were a great burden to the nation. The loans granted were not sufficient to enable them to live as before, and the majority of the Samurais had to make a living under conditions of free competition. Some invested the loans as capital to start a new business career. Unfortunately they were not experienced enough in their new enterprises and mostly failed. The saying "business of Samurai," which meant "a business which is expected to fall through inexperienced management," was very popular at this time. Thus the Samurai, numbering with their dependents some two million people, were suddenly plunged from a position of security into the depths of poverty. Their training had unfitted them for the new conditions, and their misery was one of the chief causes of the economic unrest that marked the beginning of the new era. It must not, however, be overlooked that men of culture and wider knowledge mostly belonged to the Samurai class, and the leading men in Japan in those days, such as Okubo, Kido, Saigo, Itagaki, Soejima, Goto, Ito and Yamagata, who performed the splendid work of the Restoration, came mostly from this class. The task which these young leaders undertook was really herculean.

Although the Chonin had great opportunities to prosper, their experience and knowledge were limited to either the town or the surrounding district, and rarely extended to

foreign countries. However, things eventually changed, international markets expanded, modern machinery was introduced rapidly on the opening up of foreign intercourse. Natural obstacles to the improvement of the system of communications were gradually overcome; thus long distance journeys under the old method were entirely done away with. Mass production methods were developed by the use of machinery.

Thus, business methods under the new conditions were totally different from the old-fashioned ways, beyond which the Chonin could not go. At this time the young leaders of the Samurai lost no opportunities of introducing to the nation modern economic methods, which they considered in accordance with the demands of the new age, and they put their countrymen in touch with economic developments in the international field. In fact, it was the Samurai, and not the Chonin, who first engaged in foreign trade. Similarly, those who gallantly started enterprises on a capitalistic basis under the joint-stock system were the Samurai. The pioneer force which put the machine factory system and modern banking into practice was also the Samurai. It can be said that the industrial reformation which followed the Restoration was made possible by the new commercial class of the Samurai.

We next notice the change of industries in Japan owing to the opening up of foreign trade. Conditions in trade and industry which had existed during the period of Japan's isolation, were totally altered from the beginning of the growth of foreign intercourse, as cheap but good quality foreign goods, such as cotton and woollen articles, were rapidly imported, and, on the other hand, special products of Japan, such as silk, tea and hand-made articles were in great demand by foreign countries. As a consequence, home consumers of such imported goods enjoyed great advantages in respect of low prices and good quality, although home suppliers of the same lines suffered from the severe foreign competition. However, the home industries which were encouraged by the great foreign demand provided a profitable opportunity to producers and

the result was more employment. Many of those who suffered from foreign competition were compelled to take up other industries which were more profitable; and there was a general movement of capital and labour into the most favourably situated industries. The more economic distribution of capital and labour thus came about naturally. In the meantime, the surplus capital and labour accumulated as the result of the introduction of machinery and the better distribution of capital was used in the various new industries. Much of the land which had been used for cotton growing was cultivated for tea and mulberry leaves, and the other industries which are now generally classed as "miscellaneous goods," such as matting, mats, lacquers, braids, toys, china and porcelain, were started at this period. The seed of the present development of industries was sown in these early days. The increase of production and capital was followed by prosperity; people enjoyed a higher standard of living and accumulated wealth, the result of which was clearly reflected in the rapid increase of population. Japan's population, which was less than 30,000,000 before the Restoration, increased to 33,000,000 in 1873 and to 40,000,000 in 1889.

Development of Industry and Trade.

Thus the Meiji Restoration created the new industrial era, following on the abolition of class privileges during the period of social and economic unrest, and also originated the new capitalistic movement and the modern factory system.

It was not, however, before 1870 that the first commercial company, called "Tsusho Kaisha" (General Trading Co., Ltd.), modelled on the modern system, was established. Soon after this a Banking Corporation was formed, which is now considered to be the first financial company in Japan. These establishments promptly familiarized the Japanese with methods of modern enterprise. It must not be forgotten, however, that the Japanese industrial and commercial enterprises were, roughly speaking, undertaken by the State from 1870 to 1883. During this period the Govern-

ment owned the main factories in Japan and worked them, owing to the lack of experience of the people in regard to modern methods of business management. In order to educate the people in technical and other knowledge the Government had to establish and supervise these factories. For instance, the Government owned railways, coal and other mines, shipbuilding yards, textile factories, including silk, cotton, wool-spinning and weaving mills and also factories for the manufacture of paper and glass.

During the thirteen years following the Meiji Restoration, that is, the first half of the period (1868-1893), the industries of Japan may be said to have been in the age of industrial infancy under State management. About 1883 the industries under State management were gradually handed over to private enterprise, which was at the time subsidized by the State for the purpose of encouraging staple industries ; thus the policy of State management was replaced by private enterprise.

This new policy of the Government was very successful. A knowledge of modern industrial methods was rapidly acquired, and consequently industry made wonderful progress for a short period. In March, 1890, the new Commercial Law was promulgated, so as to be in accordance with commercial and industrial development. Then the Bank Act came into force in July, 1893, which began a new epoch for banking, and the Stock Exchange Act was also passed in the same year.

The period of State-controlled industries ends with the Japanese-Chinese War of 1894, which was followed by preparations for future industrial development. If we compare the capital of various companies at the beginning and end of this period (1868-1893), we can clearly see the great industrial and commercial strides made in such a short time. The following table shows that the authorized capital of various companies at the end of 1893 was almost twelve times more than it was in the early part of the period. A rough indication of the development can be obtained from this table, although precise figures cannot be supplied.

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AUTHORISED CAPITAL OF ALL COMPANIES BEFORE THE JAPANESE-CHINESE WAR

Companies engaged in :	End of each Year.		
	1877 (yen).	1887 (yen).	1893 (yen).
Agriculture	—	1,053,000	2,542,000
Trading	454,000	35,904,000	57,616,000
Manufacture	—	14,725,000	68,259,000
Railways	—	12,080,000	57,945,000
Banking	24,981,000	75,375,000	111,635,000
Total	25,135,000	139,137,000	297,997,000

During the Japanese-Chinese War (1894-1895) special industries connected with war supplies enjoyed a great boom in spite of the depression prevailing generally in other industries. This depression was due to financial difficulties and scarcity of labour, also to the disorganization of transport caused by military necessities on land as well as on sea. The war which broke out in the early part of 1894 continued for about a year. In the spring of the following year Japan gained a great and glorious victory which was followed by the signing of the Shimonoseki Treaty,¹ the main terms of which were 200 million taels indemnity and the cession of Formosa and the Pescadores off the coast of South China. After the victory and the indemnity payment all industries flourished and many new ones were promoted. The boom reached its height in 1897, when the gold coinage system was introduced. In fact, the most important direct causes of the post-war industrial prosperity were the estab-

¹ Shimonoseki is a port (population 80,000) on the extreme south-west point of the main island of Japan, "Honshu." The Treaty Conference between the countries was held there, and the famous Shimonoseki Treaty was signed in April, 1895. The Treaty contains—

- (1) Complete independence of Korea.
- (2) Cession of the Liaotung peninsula and Formosa and the Pescadores.
- (3) An indemnity of 200 million taels.
- (4) Four inland ports must be open to commerce and the Yangtse River to navigation.

Soon after the Treaty was signed, however, Japan was forced to renounce the cession of the Liaotung peninsula, owing to the military threats of Russia, Germany and France made on the pretext of preserving the peace of the Far East, and she had to console herself with 30 million taels extra.

lishment of the gold coinage system and the revision of the one-sided treaties concluded by the Tokugawa Government in 1858. The former, needless to say, fostered Japan's industry and trade tremendously in international markets. The treaties of 1858 contained the humiliating clauses of extra-territoriality and restriction of customs duty to the very low level of 5 per cent. The revision of the one-sided treaties had been eagerly demanded before the war with China by both Government and people, and strenuous efforts had been made to secure this end.

However, it was not until 1894 that a revised treaty was signed in London, when it was seen that Japan's movement against China would be successful. It was much easier to revise the treaties after the victory, and the example set by Britain was soon followed by the other Powers. It was obvious that the revised treaties offered great encouragement to the improvement of Japan's industry and trade in both the international and home markets. Japan's international status also changed fundamentally after the war with China.

The war boom which developed to an excessive degree was followed by a slump in 1898. Industries again rallied at intervals during the two following years, but panic occurred in 1901. Although it was a terrible blow to the newly established industries in Japan, they soon recovered, foreign trade rapidly increased and normal prosperity was regained.

If the decades preceding and following the Japanese-Chinese War are compared it will be seen that good progress was made in industry and trade. The import trade¹ of 1894-1903 increased more than six times in value and four times in volume, the export increased five times in value and three times in volume, as compared with those of 1884-1888. The paid-up capital² of all companies amounted to yen 232,000,000 at the end of 1893, which increased to yen 887,000,000 ten years later. As to the classification of capital investment, banking held the largest percentage and railways came next; other industries such as engineering, chemicals, electric power supply, textile, shipping and

¹ See Table on page 14.

² See Table on page 14.

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mining industries were very insignificant as compared with the former two.

¹ IMPORTS AND EXPORTS OF JAPAN

Years.	(1884-1903)			
	Imports (Yen 1,000).		Exports (Yen 1,000).	
	Actual Value.	Revaluation.	Actual Value.	Revaluation.
1884-1888 (Average)	40,160	38,247	45,560	43,390
1889-1893 "	73,840	65,928	81,180	72,482
1894-1898 "	223,040	135,175	139,200	84,363
1899-1903 "	270,406	156,304	243,880	140,393

Revaluation is based upon the index number investigated by the *Oriental Economist* (2nd August, 1924, p. 24), as that of the Bank of Japan is not available. The actual value of 1884-1888 was revalued on the basis 105, which is the highest during the period, that of 1889-1893 on 112 of 1891, 1894-1898 on 165 of 1898 and 1899-1903 on 173 of 1903.

INDEX NUMBER OF WHOLESALE PRICES OF JAPAN.

(The *Oriental Economist*)

1873	100	1887	100	1901	170	1915	246
1874	103	1888	104	1902	166	1916	313
1875	106	1889	109	1903	173	1917	390
1876	102	1890	114	1904	184	1918	501
1877	107	1891	106	1905	200	1919	552
1878	110	1892	112	1906	206	1920	594
1879	122	1893	112	1907	220	1921	462
1880	139	1894	122	1908	203	1922	459
1881	145	1895	131	1909	200	1923	459
1882	143	1896	141	1910	205	—	—
1883	116	1897	156	1911	214	—	—
1884	104	1898	165	1912	226	—	—
1885	105	1899	166	1913	232	—	—
1886	97	1900	178	1914	218	—	—

² PAID-UP CAPITAL OF ALL COMPANIES AT THE END OF THE TWO PERIODS

Companies engaged in:	1893.		1903.	
	Capital (1,000) Yen.	Percentage of Total Capital.	Capital (1,000) Yen.	Percentage of Total Capital.
Agriculture	2,014	0.9	3,197	0.3
Trading	601	0.3	4,573	0.5
Banking	94,513	40.7	364,706	41.1
Textile	22,582	9.7	55,660	6.3
Engineering	2,578	1.1	14,580	1.6
Chemicals	7,779	3.4	24,959	2.8
Electric supply	2,033	2.9	12,152	1.4
Mining	11,632	5.0	23,590	2.7
Railways	52,342	22.6	220,225	24.9
Shipping	13,588	5.9	39,225	4.4
Total (including others)	231,966	100.0	887,606	100.0

Just ten years after the war with China it was necessary for Japan to draw her sword against Russia, in order to

defend her existence and keep the peace of the Far East. In order to ascertain the reasons of hostilities we must go back to the time when the three Powers, Russia, Germany and France, demanded from Japan the renunciation of the Liaotung peninsula. True to the plan for the occupation of China and surrounding lands made by these three Powers, Russia established herself in Manchuria and eventually controlled the peninsula of Liaotung, thereby gaining influence in Korea ; she ignored the special interests of Japan in the Korean peninsula and treated her with contempt. In spite of Japan's conciliatory offer and the conventions and memorandums exchanged between the two countries, the Russian attitude towards Japan became more and more arrogant and insolent. The relations between them suddenly became critical when Russia showed signs of preparations for war and marched her armies right into Korean territory, thereby ignoring the first clause of the Shimonoseki Treaty. In fact, the Russian invasion of Manchuria and Korea was a direct menace to Japan. The war broke out at last in 1904, and it was known as the greatest war in history, both financially and in the number of troops engaged, until the European struggle of 1914-1918.

On the outbreak of the war the financial situation in Japan became critical, owing to heavy taxation and the enormous increase in military expenditure. An economic depression was threatened, and all industries with the exception of those connected with war necessities were badly hit, especially textile firms. At this most critical time, financial help was afforded by the importation of foreign capital raised by the Government as well as by private firms. The amount raised reached approximately yen 1,120,000,000 by the end of 1906.

In the meantime, the war ended in a glorious victory, surpassing all previous ones. The Portsmouth Treaty was signed by the representatives of the two hostile countries on the 5th September, 1905, through the mediation of President Roosevelt of the United States of America. Although Russia refused to pay an indemnity, she agreed to hand over to Japan the lease of the Liaotung peninsula

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and the South Manchurian Railway, with mining and other rights, and to cede her the southern half of Saghalien. The recognition of Japan's supremacy in Korea was, of course, included in the treaty.

From an economic point of view the result of the war was a landmark in Japan's external as well as internal development. Japan expanded her trade rapidly, and the volume of capital increased a great deal. This expansion was aided by financial and industrial progress during the post-war boom, but the usual reaction set in and industry had to suffer. This situation was made worse by the American panic of 1908, which did a great deal of harm to Japanese industries, as Japan had been in close economic relationship with America. However, the loan-raising policy of the Government appeared very successful in helping those industries which were in trouble, and the Government lost no opportunity of assisting them back to their prosperity. Those regarded as the key industries in the future national development were especially protected from foreign competition by means of high tariffs and Government subsidies. The most significant feature of economic progress during the period of the ten years following the war with Russia was the rapid development of manufacturing industries, machinery, electric enterprise and shipping, which caused a remarkable increase in the volume of foreign trade of Japan. It must also be remembered that the direction of economic development during this period was entirely different as compared with the development of industry in the previous years. Japan now took the first steps towards industrialism, and began to change from an agricultural to an industrial country.

Thus, the period (1904-1913) between the Japanese-Russian War and the outbreak of the Great War may be said to have been the record stage of industrial development up to that time. It was, however, totally surpassed by the unprecedented development which followed directly after the Great War.

After the two former victorious wars the status of Japan was immensely raised, and she ranked nominally as one of

the "first-class" Powers. However, from the financial and economic points of view Japan's position, internationally speaking, did not justify such praise. Although the development achieved up to the year preceding the Great War was a wonderful record for her, the industrial progress of Japan did not keep pace with her military expansion, which was so great and successful that other Powers now began to watch her movements with jealous and suspicious eyes. However,

COMPARISON BETWEEN 1903-1913 IN FOREIGN TRADE AND
CAPITAL INVESTED

	(Yen 1000)		Percentage Increase.
Foreign Trade:	1903.	1913.	
Exports	289,502	632,460	119
Imports	317,135	729,431	130
Paid-up capital of the Companies engaged in:			
Agriculture	3,197	27,651	709
Trading	451,680	931,216	159
Textile	55,660	138,546	249
Engineering	14,580	61,132	319
Chemicals	24,959	94,114	281
Electric Supply	12,152	199,009	1,572
Mining	23,590	157,737	572
Railways	220,225	132,982	(-)-65
Shipping	39,225	70,214	79
Total (including others)	887,606	11,983,232	123

(The figure of 1903 for Railways was before the railway nationalization, that of 1913 was after the nationalization.)

prior to the Great War Japan's foreign trade was still mainly limited to trade with Asiatic countries and North America. Items of exports were still mainly those of Japanese special products which were worked by hand. The factory system was not in full operation. Common goods which are internationally demanded were not satisfactorily manufactured so as to make other countries look upon Japan as a future competitor. Had not the Great War come about Japan would still have been in the position

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she was before so far as her economic development was concerned.

The advent of the Great War was, in Japan's then state, a real stimulus and a golden opportunity for her to equip factories thoroughly with modern machinery and to establish industrial methods in accordance with up-to-date requirements. Industries flourished greatly, and the volume of foreign trade increased to a most remarkable degree. Japan, who had the great advantage of being far away from the field of action in Europe, rapidly made herself one of the leading countries for supplying goods to all parts of the world while the countries in Europe were engaged in the struggle. Consequently, Japan's foreign trade rose in value to an unprecedented extent, totalling over yen 708,307,000 for exports, and yen 532,450,000 for imports in 1915, and yen 1,962,100,000 for exports and yen 1,668,144,000 for imports in 1918, although exports of the latter year were an increase of 27 per cent in volume as compared with those of the former year, and imports were 42 per cent increase. The most remarkable thing was the vast excess of exports during the war. In spite of the fact that after the war with China there was a continuous "adverse" trade balance with the exception of 1895, 1906 and 1909, Japan's foreign trade balance changed completely, and exports exceeded imports from 1915 to 1918. The total excess of exports during this period reached yen 1,408,000,000.

VALUE OF THE FOREIGN TRADE OF JAPAN (1915-1918)

Year.	Index number. (1914=100).	Exports (Yen 1,000).		Imports (Yen 1,000).	
		Actual Value.	Revaluation.	Actual Value.	Revaluation.
1915	103	708,307	688,065	532,450	516,947
1916	144	1,127,468	782,963	756,428	525,298
1917	179	1,603,005	895,533	1,035,811	578,665
1918	230	1,962,101	853,087	1,668,144	725,280

In addition to the excess of exports we have to take into consideration that the "invisible" exports¹ were gained in a similarly favourable way. The amount of the excess of such exports reached the colossal figure of yen 1,400,000,000

¹ See Table on page 19.

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RETURNS OF THE "INVISIBLE" TRADE (YEN 1000) FROM THE BANK OF JAPAN

	1915.	1916.	1917.	1918.	Total.
Invisible Exports :					
Government	71,500	101,600	80,500	63,600	317,200
Non-Government :					
(1) Freight and charterage	61,900	175,800	294,900	495,000	1,027,600
(2) Payments by foreign vessels and shipping Cos. in Japan	9,300	10,900	13,200	12,000	45,400
(3) Payments of foreign tourists	19,000	27,600	35,700	36,000	118,300
(4) Profits of Japanese capital invested abroad and remittance of emigrants	46,400	68,500	89,900	115,000	319,800
(5) Interest on foreign loans	3,000	18,500	36,700	45,000	103,200
(6) Premiums of Japanese Insurance Cos.	14,100	38,700	83,900	110,000	246,700
(7) Miscellaneous	800	18,400	40,000	18,000	77,600
Total	226,000	460,000	675,200	894,600	2,255,800
Invisible Imports :					
Government	79,300	72,800	74,800	105,000	331,900
Non-Government :					
(1) Payments by Japanese vessels and shipping Cos. abroad	20,200	27,400	33,800	51,000	132,400
(2) Payments to Japanese residing abroad	8,000	10,400	16,100	23,000	57,500
(3) Profits of businesses engaged in by foreigners in Japan	7,400	7,700	9,700	11,000	35,800
(4) Interest on foreign capital in Japan	21,700	19,600	21,500	23,000	85,800
(5) Premiums of foreign Insurance Cos.	14,200	29,900	60,400	98,000	202,500
(6) Expenses of businesses engaged in by Japanese abroad	3,100	900	1,100	3,000	8,100
(7) Miscellaneous	200	6,200	1,900	5,000	13,300
Total	154,100	174,900	219,300	319,000	867,300
Balance	71,900	285,100	455,900	575,600	1,388,500

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during the same period ; therefore, Japan's credit towards foreign countries amounted to yen 2,800,000,000 during the above four years.

As a consequence, inflation of currency followed, causing a rise in the prices of commodities and stocks, rapid increases of profits and a considerable expansion of industries especially of manufacturing. The total amount of bank-notes issued increased in a considerable degree from 1916, and by 1918 reached three times the amount of the pre-war issue, making the amount the highest ever known in the history of Japanese currency. This great inflation was, no doubt, the result of the colossal excess of exports, the considerable income from invisible trade and the accumulation of gold specie abroad.

**ISSUE OF BANK-NOTES AND SPECIE RESERVES
(1914-1918)**

Years.	Issue of Bank-notes (Yen 1,000).				Specie Reserve (Yen 1,000).	
	Average.	Per-centage.	End of Year.	Per-centage.	End of Year.	Per-centage.
1914	315,536	100	385,589	100	218,237	100
1915	307,893	98	430,138	112	248,417	113
1916	385,806	122	601,224	156	410,519	188
1917	542,449	172	831,371	216	649,618	298
1918	745,581	236	1,144,739	297	712,925	327

As a result of the inflation and the war-time abnormal financial and industrial conditions, the prices of commodities necessarily rose rapidly. At the same time the prices of stocks and shares and dividends of various industrial companies rose to a corresponding degree.

**INDEX NUMBER OF PRICES, STOCKS AND DIVIDENDS
(The Oriental Economist)**

Years.	Prices.	Stocks.	Average Dividends.	
			First half of Year.	Second half of Year.
1914	100	100	14.8%	14.2%
1915	103	117	17.8%	21.9%
1916	144	196	34.1%	40.4%
1917	179	228	50.0%	62.5%
1918	230	221	59.2%	63.3%

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The amount of capital invested during the five years, 1914-1918 for the establishment of various companies and the expansion of businesses already existing, and for the raising of debentures, reached yen 7,575,215,000.

NEW CAPITAL ISSUES (1914-1918) (THE BANK OF JAPAN)

Years.	Share Capital (Yen 1,000).	Debentures (Yen 1,000).
1914	250,097	120,028
1915	292,584	150,958
1916	658,697	343,586
1917	1,562,530	704,805
1918	2,676,901	805,029
Total	5,440,809	2,124,406

It is interesting to observe the striking economic development of Japan during the War and to compare it with the figures recorded directly after the Japanese-Russian War. The boom of 1906-07 which followed the war with Russia was said to be the biggest with the exception of the one experienced during the Great War.

	The Boom of 1906-07.	The Boom of 1914-18.
Highest index number of prices	120 (1905=100)	230 (1914=100)
Highest figure of new capital issues in one year	Yen 1,000,000,000 (1906)	Yen 2,667,000,000 (1918)
Average rate of dividends (Cotton Industry)	24.4% (1906-07)	52.7% (1914-1918)

As soon as the war was over, economic confusion reigned all over the world without exception. It was obvious, however, that the countries most benefited by the War were the ones to feel most severely the post-war depression. Japan's position and prosperity, newly established in trade and industry, which had undoubtedly developed more rapidly than was desirable, suffered a great set-back. This resulted in 1921-1922 in the liquidation or reduction of capital of the newly established firms. The total reduction in capital amounted to about yen 980,000,000 up to September, 1922. Not only had exports begun to decline in 1919, but also the adverse trade balance again came into existence. The

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excess of imports during 1919-1924 amounted to yen 2,256,015,000, which exceeded by more than yen 850,000,000 the excess of exports recorded during the previous five years.

FOREIGN TRADE OF JAPAN (1919-1924)

Years.	Exports (Yen 1,000).	Imports (Yen 1,000).	Excess of Imports.
1919	2,098,872	2,173,459	74,587
1920	1,448,394	2,336,174	381,780
1921	1,252,837	1,614,154	361,319
1922	1,447,749	1,987,063	539,314
1923	1,637,450	1,890,308	252,858
1924	1,807,233	2,453,390	646,157

Despite the slump in industries, the rapid decline of exports and the continued adverse trade balance, the inflation of currency continued, prices of commodities, especially food prices, kept soaring, and the unemployment and labour disputes presented difficulties such as had never before been experienced in Japan. In fact, the period of 1921-1922 was the most critical in Japan's trade and industrial history. However, since the latter part of 1922 economic conditions in Japan seemed to be in a more settled state owing to financial reorganization and industrial readjustment. Then came the disastrous earthquake of September, 1923, which wiped out instantaneously hundreds of thousands of yen of material wealth. The loss of life was appalling and reached 156,693, and the direct and indirect material damage caused by the earthquake and subsequent fire was estimated at about yen 5,506,386,000, which left Japan literally as poor as if she had suffered from a first-class war. It was fortunate, however, that although the disaster mercilessly destroyed life and property as well as dislocating domestic and foreign trade to a great extent, measures to avoid social and financial chaos were promptly taken by the Government, and the work of reconstruction was commenced at once with the co-operation of the people.

From the industrial and commercial point of view, it is fairly obvious that Japan has developed greatly economically since the Great War, despite the disturbance of the post-

war depression and the damage of the earthquake. The most significant feature of all which have taken place during recent years is the striking tendency towards industrialization; exports of finished goods have increased, and those of unfinished goods have decreased; the factory system is replacing the domestic system; labour is becoming more skilled. Although this tendency was begun soon after the Japanese-Russian War, the most noticeable advance has been achieved since the Great War, which can be roughly observed in the following figures:—

PERCENTAGE OF EXPORTED GOODS

	1908-12.	1913-17.	1918-22.
Unfinished goods	4.2%	4.4%	3.1%
Finished foods and drinks	6.9%	5.8%	4.6%
Raw materials	9.1%	6.1%	5.8%
Partly manufactured goods	47.8%	47.7%	41.9%
Wholly " "	30.8%	33.8%	43.0%
Others	1.2%	2.2%	1.6%

PROPORTION OF TOTAL CAPITAL OF ALL COMPANIES ENGAGED IN VARIOUS INDUSTRIES

Companies engaged in :	1893.	1903.	1913.	1921.
Agriculture	0.87	0.36	1.40	1.44
Trading	6.98	9.79	15.85	25.71
Banking	40.70	41.10	31.10	18.20
Manufacturing	17.30	16.50	33.10	38.10
Transport	27.14	29.56	10.59	8.88
Mining	5.00	2.69	7.90	7.60

* NUMBER OF WORKERS IN FACTORIES

	1913.	1921.	Per-centage.
Manufacturing Industries in which the work is mainly performed by machinery	890,000	1,463,000	164.3
Industries mainly dependent on hand labour (including those under family system)	1,023,000	737,000	72.0

As Japan became rapidly industrialized, however, she experienced many disadvantages which were not foreseen,

¹See p. 43.

The present developed state of the industries and trade of Japan is due to her strenuous efforts to adopt Western methods and reorganize her industries and commercial institutions ; and also to two victorious wars and to the fact that the Great War offered Japan great opportunities to expand her industries and trade ; but what has most largely contributed to her economic progress in the last half century has been the fact that Japan possessed abundant cheap labour. Low wages and long working hours compensate to a certain extent for the high cost of raw material and other costs of production. Nevertheless, the recent rapid increase of wages¹ and cost of living tend not only to diminish this advantage, but also bring her natural disadvantages—such as scarcity of important raw materials—to the surface. Moreover, the high price of fuel, low efficiency of production and the high rate of interest have helped to handicap Japanese industries in international competition. The Japanese export trade which was expanded tremendously during the War has latterly been checked, owing to the rapid rise of production. This depressed state of trade is deepened by the renewal of American and European competition and the rise of new competition from Chinese and Indian cheap goods. Japan, which has to import foreign foodstuffs yearly to the amount of yen 250,000,000 and raw material to the value of yen 900,000,000, must export goods and render services in order to pay for them. It can be said without exaggeration that the only substantial export which Japan possesses is raw silk. Although industries have been developed under the modern factory system, the export of manufactures has not reached the importance of that of raw silk. What should be done is to further the improvement of industrialism in order to afford more employment for the growing population and also to correct the balance of trade. It is impossible to prevent a further rise in wages in the course of industrialization, but industries could be promoted by eliminating other disadvantages. The fundamental commercial and industrial policy which Japan has adopted during the last

¹ See p. 307.

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half century is merely a protective one, which was firmly regarded as necessary so long as her industry was in a state of infancy. But things have changed entirely—the population has increased so rapidly that Japan is no longer self-supporting. Industries have developed and need raw material which Japan does not possess. Wages keep on rising and trade returns continue adverse. To meet those conditions, the protective policy should be modified in the direction of free trade. The Government, however, is opposed to a change, and if this should continue the present depressed state of the national economy will be left unrelieved. In fact, Japan is now at the cross-roads.

PART II

BRIEF SURVEY OF CAPITAL INVESTMENT

THE degree and direction of industrial development during a certain period and the change in the position of each industry in the national economy, can be adequately observed by investigating how or in what direction capital has been invested.

Japanese industries for the last half century, as already mentioned, have developed through three wars, which curiously enough took place every ten years, and the amount of capital invested in industries was increased after each of these wars.

After waking from a long feudal sleep, Japan entered on her commercial career in earnest after the Meiji Restoration in 1868. Commercial firms and transport companies were established on the Western model, banking corporations were formed, railways were built, and mining, ship-building, spinning, weaving and other modern industries were promoted successively under Government control, and then gradually taken over by private concerns. The total amount of the authorized capital of all limited companies was nearly yen 300,000,000 at the end of 1893, the year before the Japanese-Chinese War. Of this total amount, about yen 169,000,000 was subscribed during the ten years ending 1893, and the remainder during the former sixteen years from the Meiji Restoration to 1883. The commercial and industrial strides made during this period can be seen from the following table :—

BRIEF SURVEY OF CAPITAL INVESTMENT 27

AUTHORIZED CAPITAL OF ALL LIMITED COMPANIES UP TO THE JAPANESE-CHINESE WAR

Companies engaged in :	End of 1877 (Yen 1,000).	End of 1887 (Yen 1,000).	End of 1893 (Yen 1,000).
Agriculture	—	1,053	2,542
Trading	454	35,904	57,616
Manufacturing	—	14,725	68,259
Railways	—	12,080	57,945
Banking	24,981	75,375	111,635
Total	25,435	139,137	297,997

The modern form of company organization was introduced in 1868. However, industries which needed technical knowledge and railways could not be established quickly ; and agriculture, which was still organized on a basis of small scale production, did not seem in a hurry to utilize the new ideas. The only business concerns carried on under the new system were trading and banking concerns, especially the latter, which were promptly formed into limited companies and their authorized capital rose to yen 25,000,000 by the end of 1877. Therefore, we may take it that before 1877 the most progressive business was banking, which was, however, mainly limited in its activities to the financing of trade and industry at home.

Reviewing the next two periods, i.e. 1878-1887 and 1888-1893 respectively, it is seen that manufacturing industries and railways made great strides which caused trading to flourish still more. As a consequence, the total amount of capital at the end of 1893 was more than double that of 1887 and ten times larger than that of 1877. For a more detailed investigation of the direction of industrial expansion, we take the proportion of capital invested in each industry. According to the table on page 28, at the end of 1893, the total amount of paid-up capital of limited companies reached yen 232,000,000 ; yen 110,000,000, or 47.68 per cent, being held by trading and banking concerns, 29.14 per cent by transport and 22.31 per cent by manufacturing industries.

THE PERCENTAGE OF PAID-UP CAPITAL IN VARIOUS INDUSTRIES

Years.	Agriculture.	Fishing.	Trading & Banking.	Manufacturing.	Mining.	Transport.	Total Capital.
1893	0·87	—	47·68	22·31	—	29·14	232
1894	0·48	—	48·61	17·86	—	33·06	250
1895	0·50	—	50·63	19·31	—	29·07	304
1896	0·42	—	48·49	22·61	—	28·48	398
1897	0·42	—	48·87	19·79	—	30·93	533
1898	0·37	—	48·27	19·64	—	31·72	622
1899	0·34	—	49·07	21·61	—	28·08	684
1900	0·33	—	49·03	20·39	—	29·35	779
1901	0·32	—	50·31	20·05	—	29·32	829
1902	0·29	—	50·10	19·71	—	29·90	879
1903	0·36	—	50·89	19·19	—	29·56	888
1904	0·34	—	49·05	17·49	—	33·22	931
1905	0·34	—	47·80	19·41	—	32·45	976
1906	0·46	—	46·79	23·08	—	29·67	1,090
1907	1·08	—	51·11	34·27	—	13·54	1,114
1908	1·08	—	49·09	36·27	—	13·56	1,215
1909	1·08	—	46·41	39·66	—	12·85	1,367
1910	1·14	—	46·43	39·16	—	13·27	1,481
1911	1·16	—	47·47	40·62	—	10·75	1,550
1912	1·50	—	49·21	38·59	—	10·70	1,757
1913	1·40	—	46·95	41·06	—	10·59	1,983
1914	1·32	—	47·08	40·29	—	11·31	2,069
1915	1·46	—	46·64	40·57	—	11·33	2,168
1916	1·30	—	44·02	43·43	—	11·25	2,434
1917	1·37	—	41·64	36·45	9·52	11·52	3,172
1918	0·97	—	41·23	36·08	9·94	11·78	4,707
1919	1·29	—	41·18	37·63	7·91	11·99	5,975
1920	1·38	0·47	43·66	37·11	7·79	9·59	8,238
1921	1·06	0·38	43·91	38·14	7·63	8·88	9,312
1922	1·13	0·61	46·26	36·40	8·11	7·49	8,989

Notes.—This table was taken from the *Teihoku Tokai Nenkan*, 1923. The figures for fishing before 1920 are contained in agriculture, those for mining before 1917 in manufacturing industries. In the total capital, yen 000,000 is omitted.

At that time trading was, however, not of much importance, and the investment of capital in foreign trade was not taken up like banking, which, in fact, had a larger amount of capital invested in it. The amount of capital invested in banking reached yen 94,000,000 in 1893 or 40·7 per cent of the whole. Next comes transport with 29 per cent of the total amount of capital, and the chief

investment in this was that in railway companies, which was 22.6 per cent of the total. Therefore, banking and railways together made up about 63.3 per cent of the total capital, which shows that manufacturing and mining industries were still in a very undeveloped state at that time. The percentages of capital in manufacturing and mining were 17.3 per cent and 5 per cent respectively. The branch of manufacturing industry mostly invested in was the textile industry; the electric and machinery industries, which have developed greatly in recent years, were then in their first stages of growth. In short, the tendency of industrial development in Japan in these twenty-six years was towards the building up of fundamental enterprises such as banking, railways and other transport; and these cleared the way for the future development of manufacturing industries.

After the Japanese-Chinese War (1894-1895), the industrial world of Japan made unprecedented progress by the aid of an indemnity of about yen 400,000,000 and the introduction of about yen 100,000,000 of foreign capital. The gold currency system was established in 1897. The amount of industrial capital was increased yearly without exception after the war, in spite of the fact that financial conditions were greatly disturbed, owing to the depressions of 1897-1901. After the war the annual issue of new capital was yen 50,000,000 to yen 100,000,000. The total amount of capital issued reached yen 887,000,000 in 1903, or 282.3 per cent increase, as compared with yen 232,000,000 in 1893.

Regarding the position which the various industries held at the end of 1903, the general tendency was still for the development of banking and railways as before 1893. Yen 450,000,000 or 50.9 per cent of the total paid-up capital was invested in general trading and banking, of which yen 364,000,000 or 41.1 per cent was in banking. Therefore, that invested in trading excluding banking was only yen 96,000,000 or 9.8 per cent. Transport took 29.6 per cent of the total amount, but railways accounted for the greater part of this percentage; shipping, which was still in the

early stages of development, accounted for only 4·4 per cent. Putting banking and railways together they make 66 per cent of the total, and showed, therefore, a further increase on their capital at the end of 1893. Compared with this, the development of trade (excluding banking) and of the manufacturing and mining industries was remarkably slow, and their position was greatly behind that of finance and transportation. We may, therefore, observe that the period of 1894-1903 showed an extension of the tendency which had continued through the former period, i.e. the tendency to establish fundamental enterprises such as finance and transport.

After the Japanese-Russian War (1904-1905), a new era of industrial development was entered upon following the victory and the importation of foreign capital, and although it was followed by the usual reaction and depression in 1907, the progress made helped considerably in future development. The total paid-up capital of various companies, which amounted to about yen 975,000,000 at the end of 1905, increased each year by yen 150,000,000 to yen 200,000,000, reaching the total of yen 1,983,232,000 in 1913. Of this vast amount, the yen 931,000,000 invested in trading and banking occupied first place as before, representing 47 per cent of the total. The greater portion of this amount represented investment in banking, as was the case in earlier years. However, it is noteworthy that the relative importance of banking declined rather suddenly as compared with the former two periods, viz. 40·70 per cent before the Japanese-Chinese War; 41·1 per cent before the Japanese-Russian War, and 31·1 per cent in 1913. We have also to notice the great drop in the transport percentage, which was 10·6 per cent in 1913 and 33·2 per cent in 1903; this was mainly due to railway nationalization through which seventeen railway companies were purchased by the State. On the contrary, manufacturing and some mining industries made much progress, the total capital of the former being yen 656,000,000 or 33·1 per cent of the total in 1913, and that of the latter yen 157,000,000 or 7·9 per cent. This shows the progress made. Of manufacturing industries,

the machinery, shipbuilding, chemical, electrical and gas industries were the ones which made most progress. For instance, electrical enterprises held about yen 199,000,000, or 10 per cent of the total amount of capital, which exceeded that of mining and nearly reached that of transport.

In short, it is obvious that the economic development of Japan during this period showed the commencement of modern industrial activity. Having passed through these periods, industries in Japan enjoyed an unprecedented boom during and after the Great War (1914-1918). As a consequence, the new investment of capital increased rapidly every year, ranging from yen 100,000,000 to yen 150,000,000. So far as capital is concerned, a tendency for the increase of new investments has never ceased; it has continued since the war ended, although the post-war depression was a terrible set-back to the then rising progress of industries in Japan. The total paid-up capital, which was yen 5,975,000,000 in 1919, increased to yen 8,238,000,000 in 1920, and in 1921 it increased still further to yen 9,312,000,000.

As to the positions which the various industries held at the end of 1921, trading and banking came first, as it did before, holding a capital of yen 4,089,000,000, or 43.9 per cent of the total amount. It must be understood, however, that a great alteration had taken place in the nature of the concerns included under the term "trading and banking" during this period. The capital invested in banking, which used to be the highest item under this head, was less than half the total investment in trading and banking concerns in 1921. On the contrary, the activity of home and foreign trade had considerably developed, and a remarkable improvement had taken place in manufacturing industries, the capital of which amounted to yen 3,551,000,000 or 38.1 per cent of the total. Especially was the development of the engineering industry notable compared with other industries. In the meantime, mining and transport, which had greatly boomed during the war, showed a downward tendency so far as their percentage of the total capital was concerned.

THE TOTAL AMOUNT OF PAID-UP CAPITAL OF ALL LIMITED COMPANIES (yen 1000)

	1921.		1913.		1903.		1893.	
	Capital.	Per-centage.	Capital.	Per-centage.	Capital.	Per-centage.	Capital.	Per-centage.
Companies engaged in :								
Agriculture and Fishing	134,390	1·4	27,651	1·4	3,197	0·3	2,014	0·9
Trading and Banking	4,089,214	43·9	931,216	47·0	451,680	50·9	110,585	47·7
Trade (foreign)	227,865	2·5	15,621	0·7	4,573	0·5	601	0·3
Banking	1,692,650	18·2	615,659	31·1	364,706	41·1	94,513	40·7
Manufacturing Industries	3,551,210	38·1	656,567	33·1	146,756	16·5	40,132	17·3
Textiles	830,603	9·0	138,546	7·0	55,660	6·3	22,582	9·7
Raw Silk	102,927	1·1	5,461	0·2	6,424	0·7	5,685	2·4
Cotton Spinning	355,354	3·8	87,566	4·4	39,677	4·5	12,841	5·5
Weaving	290,620	3·1	32,861	1·6	7,447	0·8	3,787	1·6
Engineering	676,154	7·3	61,132	3·1	14,580	1·6	2,578	1·1
Shipbuilding	127,880	1·4	28,440	1·4	10,530	1·2	1,194	0·5
Chemicals	569,128	6·1	94,114	4·7	24,959	2·8	7,779	3·4
Paper	121,392	1·3	24,469	1·2	8,730	0·9	2,741	1·2
Artificial Fertilizer	74,543	0·8	16,365	0·8	1,850	0·2	131	0·1
Food and Drink	326,438	3·5	65,904	3·3	29,629	3·3	2,865	1·2
Breweries	165,844	1·8	38,963	2·0	11,380	1·3	1,877	0·8
Sugar	63,252	0·7	14,770	0·7	2,710	0·3	562	0·2
Electric enterprises	788,264	8·5	199,009	10·0	12,152	1·4	2,033	0·9
Gas	78,823	0·8	64,783	3·3	5,545	0·6	—	—
Mining and Oil	710,773	7·6	157,737	7·9	23,590	2·7	11,632	5·0
Coal	204,999	2·2	39,247	2·0	4,498	0·5	5,103	2·2
Mineral Oil	86,209	0·9	31,522	1·6	7,610	0·9	481	0·2
Transport	826,485	8·9	210,061	10·6	262,383	29·6	67,603	29·1
Railways	310,254	3·2	132,982	6·5	220,225	24·9	52,342	22·6
Shipping	435,673	4·7	70,214	3·5	39,225	4·4	13,588	5·9
Total	9,312,072	100·0	1,983,232	100·0	887,606	100·0	231,966	100·0

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It is, therefore, clear that the characteristic features of this period were the development of manufacturing industries and of home and foreign trade ; in other words, the recent tendency of industrial development in Japan is totally different from that of other periods : it has been centred on manufacturing industries.

PART III

LABOUR CONDITIONS IN VARIOUS INDUSTRIES

JAPAN has been going through the stages of the transformation from an agricultural to an industrial country. The flow of population from rural to urban districts has been becoming more and more marked, and it has caused new labour problems to arise such as Japan has never before experienced.

It is well known that before the Great War conditions of labour in Japan were peculiar. Before the introduction of the factory system, with the exception of native skilled workers who were employed in small concerns, practically all Japanese labour was engaged in agriculture. Labourers on farms were also employed in the cottage industries between the harvest and seeding seasons; they were assisted by their wives and children. Their wages remained very low, and the capitalists were at a great advantage in view of lack of organization of the workers. The workers' standard of living was very low. The employers were, therefore, very favourably situated, especially in the case of manufacturers of cotton and silk. Thus, cheap labour was the great asset of Japanese manufacturers, but Japanese labourers were compelled to work hard regardless of low wages, bad conditions and long hours.

Before the War any movement connected with "labour" was absolutely forbidden by the authorities, and was held to be most undesirable and dangerous. By the well-known Section Seventeen of the Police Regulations, labour organizations which banded together working-class people for the purpose of mutual aid were prohibited. It was a strictly punishable offence for workpeople to take any action or stop work in order to enforce a demand which had been refused by their employers, as such action was held to

cause a public disturbance. At this time only capitalists were favoured by the Government, and workers were absolutely compelled to accept whatever wages and treatment were offered. Workers, mainly women and children in the cotton and silk factories especially, were working under the most miserable conditions morally and physically, being* completely under the control of their employers, who usually paid them wages in advance ; they had to live in factories just as contract labourers had to do.

However, as industries developed and the education of the people was improved, labour conditions in Japan improved also. Labour organizations were gradually formed, and strikes, which formerly were practically unknown, often took place in spite of severe official warnings and interference. The Factory Act, which improved working conditions in factories, was drafted in 1911, and came into force in 1916. Labour in general was waking up, but the whole course of events was changed by the advent of the Great War.

During the War, as described elsewhere, industries made great strides as an unprecedented demand for Japanese products arose in the world's market. As a consequence, labour was very much in demand, higher wages were paid, and the workers had a share in the general prosperity, which led the working class to demand a higher standard of living and emancipation from the restrictions which had long been imposed on labour movements. Moreover, since the War Western ideas regarding labour, both radical and moderate, have been introduced into Japan in abundance.

This tendency has been stimulated by the success of the Russian revolution and the collapse of the German monarchy. The labour question has since been the most important and difficult national problem in Japan. In fact, the Police Regulations had to be relaxed, and working people were allowed to organize labour unions and the right to strike¹ was unofficially recognized.

¹ No. of strikes.		Strikers involved.	No. of strikes.	Strikers involved.	
1897-1902	127	20,000	1918	417	66,457
1908-1911	68	14,000	1919	497	63,137
1912-1915	146	20,000	1920	282	36,371
1916	108	9,000			

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It must be remarked that the recent labour movement in Japan has achieved great successes. The reasons for this sudden development may be summarized thus: (1) the development of manufacturing industries under the factory system; (2) the increase of factory employees, especially of the number of men; (3) the rise in the standard of living and the increased wages of labourers; (4) the development of education; (5) the unofficial recognition of the labour movement; and (6) the introduction of Western ideas regarding labour.

The study of the modern labour movement and of conditions of labour in Japan is very interesting. However, we shall have to leave a thorough investigation for future opportunity, as the object of this part is to study the Japanese industrial position from the standpoint of the number of workers employed. It is, generally speaking, quite true that an increase of workers in an industry indicates the development of that particular industry; similarly, larger investments of capital and the improvement of equipment are signs of industrial development. It is, therefore, necessary to observe how far Japanese industries have been developed during recent years from the point of view of the number of workers employed.

Note.—Taking Japanese industries as a whole the proportion is roughly 60 per cent women workers to 40 per cent men. This is one reason why the power of labour has grown so slowly.

According to the report of the *Teikoku Tokei Nenkan* (The Year Book of Statistics of Japan, 1923), the following table illustrates roughly the increase of workpeople in mining, manufacturing industries and agriculture:

	1913.	1922.	Increase Percentage.
Mining industry	264,000	346,000	131.0
Manufacturing industries (excluding family workshops)	1,913,000	2,200,000 ¹	115.0
Agriculture	27,036,000	27,195,000 ²	100.5

¹ Excluding about 93,000 workers in Government factories and 71,000 casual labourers in 1922. With reference to details, see p. 43.

² Estimated on basis of number of families employed in agriculture and includes all members of family.

During the ten years 1913-1922, the mining industry has been the most progressive so far as percentage increase in numbers employed is concerned, showing an increase of 31 per cent above 1913; manufacturing industries come next and agriculture last. The increases, however, which took place according to this classification of industries cannot be said to explain the whole position, as some of the industries covered by the above groups show a decrease and some an increase. Therefore, it is necessary to divide the groups in a more detailed way in order to investigate the real position with regard to the changes in the numbers of workpeople employed in the various industries.

Mining Industry.

Mineral resources in Japan are very poor, and even copper, sulphur and coal, which are the main products, are generally considered to be unpromising as far as their future production is concerned. In fact, the number of workers engaged in these industries, with the exception of coal mining, shows a gradual downward tendency. However, coal mining, which is the main industry in its category at present, is still very important in respect of foreign trade as well as from the standpoint of home consumption. Other mineral industries only fulfil home demands or supplement imported mineral products.

According to the following table increase in the number of workers in the mining industries is totally due to the increase in the number of coal miners. It must be remembered that the present state of the coal industry in Japan, however, is not very reassuring; the main reason for it keeping its present importance is simply the fact that Japan is situated advantageously, compared with America and England, for supplying the coal market of the East; further, the coal mines of China, India and Australia have not yet been explored sufficiently to make it possible for them to supply their coal to foreign markets. These facts have given a greater advantage to Japanese coal, which, by the way, is by no means cheap or of good quality compared with foreign coal. Should this advantage disappear in the

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future, the present state of the industry will not be maintained, owing to the increasing cost of production and the poorness of the coal seams.

Therefore, the state of the mining industry in Japan, though coal is indispensable to the nation, is quite different from that of the industry in such a country as England, whose existence can scarcely be imagined without coal, iron and steel.

NUMBER OF WORKPEOPLE IN MINES

Years.	Coal.	Gold, Silver, and other precious		Total.
		Metals.	Others.	
1906	106,589	73,751	12,817	193,159
1907	128,772	76,721	13,171	218,664
1908	126,999	69,433	9,325	205,757
1909	152,515	74,105	9,189	235,809
1910	137,476	74,736	12,034	224,239
1911	145,412	72,614	10,278	228,304
1912	152,429	73,694	10,132	236,255
1913	172,446	79,479	12,211	264,136
1914	182,637	77,214	12,545	272,396
1915	193,142	86,359	12,457	291,958
1916	167,907	139,175	17,320	354,402
1917	259,144	165,151	20,520	435,815
1918	289,159	160,960	18,690	466,809
1919	348,340	100,800	18,117	467,157
1920	342,873	78,842	18,837	440,552
1921	267,614	45,423	16,488	329,525
1922	294,022	40,080	12,171	346,283

Agriculture.

As we have mentioned elsewhere, agricultural production in Japan, although gradually increasing, is not sufficient for the vast demand of the ever-increasing population. The demand has been substantially supplied by imported foods, which account for a large proportion of imported commodities. More than half of the population in Japan live by farming land, cultivating about 15,500,000 acres; the average holding is about half an acre for each person, or about 2½ acres per family. Not only is Japan one of the most densely populated countries, but also she has a smaller cultivatable area per head than any other nation. Having

no outlet by emigration for her increasing numbers, Japan is obliged to till every possible foot of land, even on hillsides and in valleys. A visitor to Japan observes that there are hardly any uncultivated spots along the railway lines and near towns; even in the remote hilly country, where it is apparently very inconvenient for transportation, every square inch is used and every piece of land ploughed with the utmost care. It must be noticed that Japanese farms are so small in area and the cultivation of rice (which is the principal product) is carried on in such a way that modern agricultural machinery cannot be used. Owing to the farmers' poverty, the land is cultivated mostly by labourers who work for very low wages. With regard to the possibility of increasing agricultural production, there seems little hope of bringing this about, unless further land readjustment, the greater use of fertilizers and the adoption of scientific methods of cultivation are undertaken. It is hardly possible, however, that the future increase of production will be sufficient for national consumption; the volume of imported foreign foodstuffs will have to be increased.

According to the *Teikoku Tokei Nenkan*, 1923, Japanese farmers are divided into three groups: (1) actual landowners, (2) small tenant farmers, and (3) those who are landowners working their land themselves. The first named rent land to tenants and own generally larger pieces of land than the last named. An interesting feature of recent years in regard to the changes in those three groups is that the number of landowners is decreasing, while the other two groups are increasing. According again to the above *Nenkan*, in 1921 there were 130,054 fewer landowners, 57,675 more small tenants, and 120,857 more small landowners than in 1909. This tendency shows that the labourer was getting a more direct interest in the land through becoming a tenant farmer. Also it seems that land is getting more evenly distributed. But the increase of tenant farmers, on the other hand, is one of the causes of what are called the "tenant troubles," which have been the central features of the recent agricultural disputes. As

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the number of tenant farmers increases, the more frequently do the tenant troubles occur. The present unremunerative state of agriculture is the second most important cause of the troubles; bad crops, resulting from various disasters, being the principal cause, as mentioned below. Take rice, for example. It was said to be an absolutely ruinous price for general consumers, when the price per koku in the Tokio Rice Stock Exchange a year ago was yen 41. However, comparing this price, which was higher than any price ever known before, with the cost of rice production, we can clearly observe that the margin of farmers' profit is very small.

COST OF RICE PRODUCTION (PER KOKU, 1924)

(From a Report of the Rice Examiner's Office, Toyama Prefecture, Japan)

	Yen.
Rates and taxes	4·00
Rice seed	0·74
Manure	8·90
Upkeep of Horses	1·40
Cost of tools and other implements	0·50
Wages (12 persons at yen 1·20 a day)	15·60
Interest on value of land (yen 500 per tan is the estimated value of land. Interest reckoned at 6 per cent)	13·33
Miscellaneous	0·24
	<hr/>
Total of Actual Cost	44·71
	<hr/>
Extra receipt made by sale of broken rice, husks and straw, etc.	4·50
	<hr/>
	yen 40·21

This is the cost for the landowners who cultivate their own lands, but the cost of production for the tenants is generally higher. They have to hand over from 40 to 60 per cent of their crops to the landlords as rent. What is then left in their hands is the half of their crops, which is to furnish their whole profit for a year, so far as rice cultiva-

tion is concerned. The fact that the cases of tenant troubles¹ have been rapidly increasing in number during recent years, shows perfectly well the distressed condition of the tenant, which has also been made greatly worse by high cost of living in Japan.

Thus, owing to the present unpromising state of agriculture, there is a constant drift of the population from the country to the town. This flow is especially significant among the younger members of the tenant farming class. Japanese agriculture is faced with the serious problem of how to retain a sufficient number of workers to maintain production at the present level.

Although the total number of agricultural families has shown a gradual increase yearly, it must be remembered that the population of Japan has increased very greatly. According to the recent census, the population of Japan has been increasing yearly by about three-quarters of a million, as it was 50,254,000 in 1909 and 59,460,000 in 1922, making an increase of 9,206,000 or 18.2 per cent in fourteen years, while the number of families working in agriculture increased only by 31,700 or 0.5 per cent during the same period. This shows, therefore, that agriculture in Japan cannot absorb the increasing population in its present state; in other words, the number of labourers on farms is relatively decreasing. To make this analogy more clear, we may take the following table, which shows the total population of Japan and the estimated population engaged

¹ *Cases of Tenant Troubles.*

1917	85	1921	1,680
1918	256	1922	1,578
1919	326	1923	1,917
1920	408		

Causes of Tenant Troubles.

Percentage of Total Number of Cases.	Causes.
55.2 caused by	Bad crops owing to various disasters.
13.6	Unremunerative returns of cultivation.
7.9	High rent.
6.7	Labour disputes.
6.1	Fall in price of products.
2.1	General difficulty of living.
0.8	Hostility towards landlords.
7.6	Other causes.

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in agriculture. As it is impossible to obtain accurate figures of the number of agricultural labourers, the number has been estimated on a basis of five people to each family, which is the average size of a family according to the latest census. It must be remembered, however, that the estimated figures include not only farmers, but their dependents as well; also these figures are in all probability not too large as it is usually the case that farmers have larger families than others.

According to the table, the total population in Japan has increased by 9,206,000, or 18·2 per cent during the fourteen years, 1909-1922, and, as mentioned, the population in agriculture has shown only an increase of 159,000, or 0·5 per cent during the same period. Again, taking the percentage of the agricultural population to the total population, it shows a gradual decrease, from 53·8 per cent in 1909 to 45·7 per cent in 1922. It is, therefore, obvious that the decrease in the agricultural population shows that larger numbers of people are being absorbed in industry.

Years.	Total Population of Japan.	Estimated Population in Agriculture.	Percentage of Total Population.
1909	50,254,471	27,036,000	53·8
1910	50,984,844	27,084,000	53·1
1911	51,253,634	27,099,000	52·5
1912	52,522,753	27,190,000	51·9
1913	53,362,682	27,218,000	51·0
1914	54,142,441	27,281,000	50·4
1915	54,935,755	27,266,000	49·6
1916	55,637,431	27,288,000	49·0
1917	56,335,971	27,331,000	48·7
1918	56,667,711	27,383,000	48·3
1919	57,233,906	27,405,000	47·8
1920	57,918,671	27,422,000	47·5
1921	58,697,136	27,278,000	46·2
1922	59,460,252	27,195,000	45·7

NUMBER OF FAMILIES IN AGRICULTURE
(000'S OMITTED)

Years.	Land-owners.	Per-centage.	Tenant Farmers.	Per-centage.	Those who are Landowners working themselves.		Total.	Per-centage.
					Per-centage.	Per-centage.		
1909	1,799.1	33.27	1,496.9	27.69	2,111.0	39.04	5,407.2	100
1910	1,776.8	32.80	1,500.9	27.71	2,139.1	39.49	5,416.9	100
1911	1,762.2	32.51	1,501.9	27.71	2,155.7	39.78	5,419.9	100
1912	1,763.8	32.44	1,497.8	27.54	2,176.3	40.02	5,438.0	100
1913	1,744.8	32.05	1,520.9	27.94	2,177.9	40.01	5,443.7	100
1914	1,731.2	31.73	1,520.4	27.87	2,204.5	40.40	5,456.2	100
1915	1,718.9	31.52	1,522.8	27.92	2,212.2	40.56	5,453.2	100
1916	1,696.2	31.08	1,524.9	27.94	2,236.5	40.98	5,457.7	100
1917	1,694.2	31.00	1,534.6	28.07	2,239.3	40.93	5,466.3	100
1918	1,697.0	30.98	1,550.3	28.31	2,229.4	40.71	5,476.7	100
1919	1,700.7	31.03	1,545.6	28.20	2,234.8	40.77	5,481.1	100
1920	1,682.5	30.68	1,557.8	28.41	2,244.1	40.91	5,484.5	100
1921	1,666.0	30.59	1,554.6	28.50	2,231.9	40.91	5,455.6	100
1922	1,662.1	30.56	1,541.8	28.35	2,235.0	41.09	5,438.9	100

Manufacturing Industries.

Regarding manufacturing industries, it will be more convenient to divide them into two classes, as shown in the following table, in order to investigate recent tendencies in their development. The classes are: (1) industries mainly dependent on machinery and (2) those mainly dependent on hand labour. The latter class may be subdivided into (a) those industries in which the number of workers employed increased, and (b) those in which it decreased.

NUMBER OF WORKERS IN FACTORIES

	1913.	1922.	Increase. (+) Decrease. (-)	Per-centage.
(1)	890,000	1,463,000	(+) 573,000	164.3
(a)	196,000	261,000	(+) 65,000	138.2
(2) (b)	827,000	476,000	(-) 351,000	57.5
Total	1,913,000	2,200,000	(+) 287,000	115.0

(This table excludes about 93,000 workers in Government factories and 71,000 of casual labourers in 1922.)

Amongst industries, those which are classified under (1) and in which the work is mainly performed by machinery, are more advanced than those under (2). The principal items in the first class are textiles, such as cotton, silk,

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hemp, hosiery and other modern enterprises, such as chemical products, electrical goods, cement, sugar and paper. These are the most fundamental industries in Japan, both for the home markets and for foreign trade.

CLASS I

Items.	NUMBER OF WORKERS IN FACTORIES		Percentage compared with 1913.
	1913.	1922.	
Cotton spinning	114,988	211,452	183·8
Silk manufactures	9,389	21,495	228·9
Woollen manufactures	20,917	40,242	192·3
Hemp manufactures	3,995	15,109	378·2
Hosiery	10,238	22,128	216·1
Rugs and carpets	950	12,667	1343·9
Other textile factories	667,943	942,890 ^a	141·1
Chemicals	3,365	6,762	200·9
Paper	7,622	13,484	176·9
Sugar	1,138 ¹	4,069	357·5
Machinery	27,195 ¹	68,543	252·0
Shipbuilding and vehicles	28,234 ¹	103,417	366·2
Total	896,000	1,463,000	163·2

¹ Shows the figures of 1914; ^a 1921.

CLASS 2 (a)

NUMBER OF WORKERS IN FACTORIES			
China and porcelain	35,367	44,072	124·6
Bricks	9,733	12,205	125·4
Tiles	39,482	40,410	102·3
Lacquer wares	20,450	22,266	108·9
Oils	9,971	28,524	285·9
Soaps	1,918	3,462 ¹	181·0
Glass wares	8,869	18,379	207·2
Copper goods	5,527	7,269 ¹	131·5
Enamel wares	1,764	2,670 ¹	151·5
Bamboo articles	18,905	21,772	115·1
Rubber goods	5,043	17,212 ¹	341·1
Toys	4,739	5,341 ¹	112·7
Tinned stuffs	6,460	7,429	115·0
Matches	16,535	17,250 ¹	105·3
Buttons	3,454	4,647 ¹	117·5
Brushes	3,311	3,850	116·2
Leather	3,680	3,719	101·0
Total	196,000	261,000	133·1

¹ Shows the figures of 1921.

CLASS 2 (b)

NUMBER OF WORKERS IN FACTORIES

Items.	1913.	1922.	Percentage compared with 1913.
Mats and matting	215,926	177,944	82.4
Candles	6,562	4,596 ¹	70.0
Camphor	5,987	5,481	90.1
Peppermint	16,522]	10,402	62.9
Japanese paper	153,549	116,824	76.7
Various braids	364,970	142,206	36.1
Hats and caps	17,818	9,744 ¹	54.6
Fans	6,943	5,915 ¹	85.1
Laces	36,613	1,693 ¹	4.6
Celluloid goods	1,679	1,129 ¹	67.2
Total	827,000	476,000	57.5

¹ Shows the figures of 1921.

Class 2 (a) contains partly the old Japanese industries, such as those producing china, porcelain, lacquers and bamboo articles, and some of the newly established manufacturing businesses, such as, for instance, soap, enamel wares, seed oils, rubber manufactures, toys, etc. Although these reached the climax during the Great War and production decreased rapidly after, they are still holding an important place as compared with 1913.

On the contrary, those classified as Class 2 (b) contain mostly special products of Japan. Although some of them are in common demand in the international market, a rapid decrease has taken place on account of keen foreign competition since the War.

With regard to the changes in the industrial position in Japan, it may be generally observed that the industries under the factory system have shown rapid progress in spite of the fact that the others which are mostly performed by hand have been showing a relatively slow increase and some a significant decrease. It is fairly obvious that Japan has been progressing in the direction of industrialization. Moreover, this fact will appear certain when we examine the change in the proportion between the number of male and female workers in the manufacturing industries.

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Generally speaking, female workers in Japan are considered as unskilled labourers, although they are in the majority in the textile industries, matches and braid works. Male workers are, on the contrary, recognized as skilled labourers. As mentioned elsewhere, Japanese industries started chiefly with the employment of women and children on a basis of sweated labour. However, as industries developed, the more necessary it became to have skilled and experienced hands. The employment of men was encouraged not only because women's wages had risen with the increasing cost of living, but also because employers needed more skilled and experienced men in accordance with the general progress of industries. Again, factories are now unable to obtain an ample supply of female labour as they could in the early stages of industry, because of the various opportunities offered to women in towns in addition to factory work, and also because of women's broader outlook on life, and higher culture and education which make them look to work other than manual labour.

This fact can be seen most clearly in industries in which machinery is mainly employed, such as the various textile industries, except cotton spinning and hosiery. For instance, silk manufactures, which still depend largely upon female labour, and for which male labour is not much required except for the technical part of the work, employed 343 women for every 100 men in 1913 and 284 women for every 100 men in 1922. Other instances can be seen in the following table :

PROPORTION OF FEMALE AND MALE WORKERS IN
CLASS I FACTORIES

	1913.		1922.		Number of Women per 100 Men.	
	Female.	Male.	Female.	Male.	1913.	1922.
Cotton spinning	93,724	21,264	174,118	37,334	441	466
Silk manufactures	7,272	2,117	15,908	5,587	343	284
Woollen manufactures	17,651	3,266	32,677	7,565	540	431
Hemp manufactures	2,970	1,025	9,799	5,310	289	184
Hosiery	5,638	4,600	13,426	8,701	122	155
Rugs and carpets	834	116	9,767	2,900	719	336
Other textiles	630,923	37,020	563,863	84,317	1,704	668
Chemicals	212	2,449	661	6,101	8	10
Paper	1,905	5,717	2,506	10,978	33	23
Sugar	52	1,086	457	3,612	5	12
Machinery	388	26,807	2,354	66,189	1	3
Shipbuilding & vehicles	213	28,021	1,979	101,438	1	1

As will be seen in the case of the industries which depended more on hand labour than on machinery, such as china, porcelain, tiles, mats and matting, seed oils, candles, soap, matches, braids and glass wares, the proportion of women employed has increased.

PROPORTION OF FEMALE AND MALE WORKERS IN
CLASS 2 FACTORIES

	1913.		1922.		Number of Women Per 100 Men. 1913. 1922.	
	Female.	Male.	Female.	Male.		
China and porcelain	8,095	27,272	11,974	32,098	29	37
Tiles and bricks	8,996	40,219	10,607	42,008	22	25
Mats and matting	143,518	72,408	120,810	57,137	198	211
Seed oils	2,068	7,903	21,323	7,201	26	296
Candles	692	2,285	802	2,094	30	38
Matches	11,628	4,907	10,801	3,561	236	303
Various braids	264,878	100,092	99,403	42,803	264	232
Glass wares	428	8,441	1,963	16,416	5	12
Soap	710	1,208	1,475	1,987	59	74
Copper goods	249	5,278	621	6,648	4	9
Enamel wares	283	1,481	558	2,118	19	26
Rubber goods	1,937	3,106	7,521	9,691	62	77
Celluloid goods	418	1,261	348	781	33	44

The above facts point to the conclusion that industries which are organized on a basis of factory production have reached the stage of management where skilled labour is much more necessary than unskilled. The reason why other minor industries have more increased proportion of female than male labour is the fact that they are not advanced enough yet to be able to pay the high wages demanded by the men.

The following summarizes the foregoing descriptions: Mines show a heavy decrease compared with other industries in the number of workers, with the exception of coal mines, which show an increase owing to having least foreign competition. In agriculture, excepting a few cases such as tea and mulberry plantation for the silk industry, which are all special products in Japan, very slow progress has been made in spite of the fact that there is a great shortage of agricultural products compared with the demand of the growing population. Therefore, we have to come to the conclusion that the recent industrial development

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in Japan has been chiefly in the manufacturing industries, especially those in which machinery is largely employed.

As the result of the development of manufacturing industries, thousands of people from the country are pouring into the industrial centres; the abnormal expansion of industrial towns is a most striking phenomenon. For instance, Tokio, the capital, has increased its population from 900,000 in 1900 to 2,100,000 in August, 1923, and Osaka, the greatest industrial city in the empire, from 450,000 to 1,800,000. The above two, together with Kioto, Nagoya, Yokohama and Kobe, which all have a population of more than 500,000 at present, are the largest cities in Japan. Except Kioto, which is well known as the capital of the old Japan for generations, the others are all either industrial or commercial centres. This growth of densely populated cities is the dominant characteristic of the new industrialism. The expansion of Japanese industry and commerce is, therefore, the most vital of all problems. The future of Japan depends not on agriculture, or mining, but on the development of industry and trade.

This subject will be further dealt with in the study of foreign trade and of the representative industries in the following chapters.

PART IV

FOREIGN TRADE

CHAPTER I

BRIEF DESCRIPTION

BEFORE the American fleet anchored in Tokio Bay in 1854, Japan had practically been a hermit nation, barring its people altogether from foreign intercourse. The exclusion of foreigners and the strict laws forbidding Japanese to go abroad, which had been enforced by successive Shoguns, were incompatible with the treaty which the American Commander, Commodore Perry, negotiated; and the restrictions between old Japan and the outside world were completely removed in the years that followed. After the conclusion of the commercial treaties with European countries, there followed the opening of five treaty ports: Yokohama, Kobe, Nagasaki, Niigata and Hakodate. Before the Meiji Restoration Japan had no foreign trade. The new era, beginning in 1868, caused her social and economic life to undergo incredible changes. The number of the treaty Powers soon reached forty-four, and Japan's business interests abroad extended tremendously. The growth of foreign trade reflects most distinctly Japan's general economic development.

The development of the Japanese foreign trade from the Meiji era to the present time may be divided into three periods, from the point of view of not only the increase of volume and value, but also character and distribution. The first embraces the years 1868-1893; the second,

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1894-1913; and the third is the period after the great European War.

EXPORTS AND IMPORTS OF JAPAN

	Years.	Exports (Yen).	Imports (Yen).
	1868-1872 (average)	15,799,600	22,661,400
	1873-1877 "	22,124,400	26,585,400
	1878-1882 "	30,267,000	32,618,000
(1)	1883-1887 "	42,113,600	32,768,800
	1888-1893 "	77,118,000	72,466,000
	1894-1898 "	139,200,000	223,040,000
(2)	1899-1903 "	243,880,000	270,406,000
	1904-1908 "	377,040,800	441,879,200
	1909-1913 "	495,683,000	544,132,800
	1914-1916 "	808,895,000	628,203,700
(3)	1917-1919 "	1,887,992,300	1,625,904,300
	1920-1923 "	1,571,607,500	1,956,924,700
	1924	1,807,233,000	2,453,390,000

The total value of Japan's foreign trade in 1868 was yen 15,553,000 in exports and yen 10,693,000 in imports. In the following fifteen years it more than doubled in value. During these years an excess of imports was returned, but in 1882 the "favourable" trade period commenced and continued up to 1893, or just before the Japanese-Chinese War. The resumption of specie payments was effected in 1885, and the long depreciated paper notes were brought to par with silver. The conditions of foreign intercourse were reorganized, and Japan obtained full control of her Customs. National economy was successfully reformed by the introduction of Western methods. This, together with restored confidence in the stability of the medium of exchange, gave new and vigorous life to commerce and industry in Japan. With 1885, the Japanese foreign trade not only entered upon a period of remarkable progress, but changed its character and geographical area. From 1888 the total value of foreign trade again increased rapidly year by year. Prior to 1890 exports had been merely the overflow of the surplus products of the country; but many new industries then came into existence owing to the

increase of foreign demand, and the export of manufactured goods began to exceed that of raw materials with the exception of raw silk.

During the second period there were several significant occurrences, the first being the Japanese-Chinese War (1894-1895), which caused trade to increase by leaps and bounds. The average value of exports (1894-1898) was yen 139,200,000, or an 80 per cent increase compared with that of 1888-1893; that of imports was yen 223,040,000, a 207 per cent increase.

Through vital necessity, experienced during the war, the first protective tariff was put into force in order to foster home industry, especially such as steel, machinery, shipbuilding and chemical industries, for the purpose of making Japan independent of foreign supplies, and, on the other hand, of developing her export trade.

The second significant event during this period was the Japanese-Russian War, two years after which the usual war boom was experienced, and the enormous figures of yen 432,412,000 of exports and yen 494,467,000 of imports were reached in 1907. In 1911 a higher tariff was imposed on foreign goods, as greater protection was thought absolutely necessary, in order to improve and develop further Japanese industries which had now achieved an important position in the national economy. The average value of exports and imports during 1909-1913 was yen 495,683,000 and yen 544,132,800 respectively, increases of 256 per cent and 144 per cent compared with 1894-1898.

The third period commenced soon after the Great War broke out, and an unprecedented demand was experienced for Japanese manufactured goods. During the greater part of the five years after 1915, Japan's foreign trade multiplied, owing to the absence of competition and also to keen demand from all over the world for Japanese goods, in spite of their inferiority. The value of exports in 1919 was yen 2,098,872,000, and that of imports in 1924 yen 2,453,390,000, the highest figures for each item recorded since the Meiji Restoration.

According to the Report of the Department of Finance,

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the total value of trade was yen 75·95 in 1919 and yen 25·52 in 1913 per head of the whole population of Japan, while some twenty years ago the figure was only yen 4·30.

However, when the world-wide financial depression came in 1920 and war time advantages disappeared and foreign competition revived, the mushroom industries of Japan had to meet reverses. As a consequence, not only have the figures of foreign trade since 1919 shown a decrease, but the "adverse" trade balance has continued ever since that year.

EXPORTS AND IMPORTS OF JAPAN OF 1913 AND SINCE THE ARMISTICE

Years.	Exports (Yen).	Imports (Yen).	Excess of Imports over Exports.
1913	632,460,000	729,431,000	96,971,000
1919	2,098,872,000	2,173,459,000	74,587,000
1920	1,948,394,000	2,336,174,000	387,780,000
1921	1,252,837,000	1,614,154,000	361,317,000
1922	1,447,749,000	1,987,063,000	539,314,000
1923	1,637,450,000	1,890,308,000	252,858,000
1924	1,809,233,000	2,453,390,000	646,157,000

It is needless to explain that owing to the heavy rise of prices since the Great War, the apparent increased value of trade, compared with pre-war figures, cannot be said to show an actual increase. In order to show an actual increase, the quantity of goods imported and exported must be revalued on the basis of pre-war figures, and then it will be seen whether the trade has increased or decreased. It is, however, hardly possible to furnish an accurate total revaluation in this way, as some items in the Japanese Trade Returns are not described in quantity. Therefore, we take the index number of prices as an alternative method of revaluation. Although not entirely satisfactory, it furnishes a rough method of estimating the actual value of trade.

The following table was made on the basis of the index number of the Bank of Japan, and showed the value of foreign trade in 1919-1924 as compared with 1914.

REVALUED EXPORTS AND IMPORTS OF JAPAN

Years.	¹ I.N.	Exports (Yen).	Percentage.	Imports (Yen).	Percentage.
1914	126	632,460,000	100·0	729,431,000	100·0
1919	312	848,262,000	133·9	877,743,000	120·3
1920	343	713,653,000	112·8	858,157,000	117·6
1921	265	591,915,000	93·5	767,484,000	105·2
1922	259	696,606,000	110·1	966,679,000	132·5
1923	263	784,481,000	123·9	866,839,000	120·2
1924	273	804,804,000	127·2	1,132,301,000	155·2

According to the above table, the percentage of 1920, when the nominal figures of trade reached the highest total since the Restoration, showed only 12·8 per cent increase in exports and 17·6 per cent increase in imports, compared with those of 1914, in spite of the total nominal value being three times larger than the pre-war. It is noticeable that 1921, the worst year of the depression, showed less exports than 1914. By 1922-1924, economic Japan had not freed itself from post-war readjustments, and therefore could not be otherwise than dull and stagnant. However, during those years the trade increased substantially compared with 1914, and the actual increase in 1924 was 27·2 per cent in exports and 55·2 per cent in imports, the latter of which was undoubtedly increased owing to the purchase of reconstruction material for damage caused by the earthquake of September, 1923. The suddenness of the earthquake in Tokio and Yokohama and the surrounding regions caused an overwhelming disturbance in every department of national economy. As a consequence, the staple exports such as raw silk and silk tissues in stock were destroyed by fire, while the capacity for producing cotton yarn and fabrics as well as other articles was impaired. So far as silk and cotton are concerned, the export of raw silk in 1923 showed a decrease of 15 per cent and of cotton yarns 31 per cent compared with those of the previous year. On the other hand, in addition to a great increase in the demand for wool and woollen yarns, the import of foodstuffs, building material, etc., made necessary by the disaster, also increased since the earthquake. Thus,

¹ Index number of wholesale prices, 1900=100.

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throughout the year 1924, imports continued to exceed exports to the unprecedented amount of yen 646,157,000. This is the largest deficit on record for Japan.

EXPORTS AND IMPORTS OF JAPAN SINCE THE MEIJI RESTORATION
(1868)

Years.	Exports (1,000 Yen).	Imports (1,000 Yen).	Value per head (Yen).
1868	15,553	10,693	—
1869	12,908	20,783	—
1870	15,543	33,741	—
1871	17,968	21,916	—
1872	17,026	26,174	—
1873	21,635	28,107	—
1874	19,317	23,461	—
1875	18,611	29,975	—
1876	27,711	23,964	—
1877	23,348	27,420	1·46
1878	25,988	32,874	1·65
1879	28,175	32,953	1·70
1880	28,395	36,626	1·79
1881	31,058	31,191	1·70
1882	37,721	29,446	1·82
1883	36,268	28,444	1·73
1884	33,871	29,672	1·67
1885	37,146	29,256	1·74
1886	48,876	32,168	2·11
1887	52,407	44,304	2·47
1888	65,705	65,455	3·31
1889	70,060	65,103	3·40
1890	56,603	81,728	3·42
1891	99,527	62,927	3·50
1892	91,102	71,326	3·96
1893	89,712	88,257	4·30
1894	113,246	117,481	5·52
1895	136,122	129,260	6·28
1896	117,842	171,674	6·78
1897	163,135	219,300	8·84
1898	165,733	277,502	10·13
1899	214,929	220,401	9·84
1900	204,429	287,261	10·97
1901	252,349	255,816	11·18
1902	258,303	271,731	11·51
1903	289,502	317,135	12·98
1904	319,260	371,360	14·63
1905	321,533	488,538	16·99

FOREIGN TRADE

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Years.	Exports (Yen 1,000).	Imports (Yen 1,000).	Value per Head (Yen).
1906	423,754	418,784	17.50
1907	432,412	494,467	18.99
1908	378,245	436,257	16.43
1909	413,112	394,198	16.06
1910	458,428	464,238	18.10
1911	447,433	513,805	18.58
1912	526,981	618,992	21.82
1913	632,460	729,431	25.52
1914	591,101	595,735	21.88
1915	708,306	532,449	22.71
1916	1,127,468	756,427	33.82
1917	1,603,005	1,035,811	46.67
1918	1,962,100	1,668,143	63.62
1919	2,098,872	2,173,459	75.95
1920	1,948,394	2,336,174	75.94
1921	1,252,837	1,614,154	50.52
1922	1,447,749	1,987,063	¹ 57.77
1923	1,637,450	1,890,308	¹ 59.33
1924	1,807,233	2,453,390	¹ 71.65

(From the *Financial and Economic Annual of Japan*.)

¹ In the above table the figures marked ¹ are total value of trade divided by the total population of Japan (proper), officially reported to be 59,460,252 in 1922.

CHAPTER II

CHANGE IN COMMODITIES

THE change in the economic position and the modern tendency towards industrialism in Japan have consequently brought about a great alteration in the character and distribution of foreign trade. Nevertheless, Japan was never in the real sense a country of commerce and industry before the Great War. For a long time after the Restoration the Japanese export trade consisted for the most part of raw material, and the manufactured articles exported were confined to a few special products of manual work ; on the other hand, imports were exclusively manufactured goods. After a lapse of fifty years, however, the aspect has completely changed. According to the figures of 1923 the export of raw material, food-stuffs and drink, unfinished goods (including raw silk) and wholly manufactured goods was in proportion of 5·6, 6·3, 48·4 (39·2 for raw silk) and 37·4 respectively, while the corresponding figures for imports were 50·2, 12·6, 17·5 and 17·7, as shown in the table on page 58.

Examining exports and imports in greater detail, we find that a notable change has taken place in the relative importance of different commodities. During the earlier part of the Meiji era the principal exports consisted of raw silk, tea, bamboo manufactures, mattings, wax and some marine products. With the single exception of raw silk, which still heads the list, these commodities have lost much of their importance, and their place has been taken by cotton yarn, sheetings and shirtings, other cotton goods, silk tissues, coal, porcelain and earthenware, matches, paper, sugar and a number of manufactured articles. Among imports,

cotton and woollen goods, guns, raw cotton, and sugar were the main articles at the beginning of the Meiji era. At the present time, raw cotton stands highest, being followed by iron and steel manufactures. Foodstuffs such as rice, wheat, soya beans, oil cake, raw wool and woollen yarns and various chemical products have become large items. Having dealt with the rough figures of foreign trade, I now give an analyzed statement regarding the principal exports and imports in the sections shown on page 58.

§ I. EXPORTS OF RAW SILK AND MANUFACTURED GOODS

Needless to say, silk is Japan's outstanding staple product. Raw silk exports come first among all Japanese exports, whether agricultural or manufactured. In 1923, the value of raw silk exported was yen 568,370,000, that is, about 39.2 per cent of the total exports. Ten years ago it stood at yen 188,917,000, and twenty years ago at yen 76,859,000. Although the recent development of the Chinese silk industry has shown remarkable strides, yet its present rate of progress is not considered dangerous to the Japanese silk industry. Japan has held, and will still probably continue to hold the position of chief supplier of raw silk to the international market.

However, it should be known that the recent increase of raw silk export is mainly due to enhanced consumption in America. Without the American demand for Japanese silk, the increase would most probably not have proceeded at such a rate. Therefore, to a certain extent the increased exportation of silk is not a direct reflection of the internal progress of the silk industry in Japan. Another reason to be considered is that the silk industry has been standing on much more solid ground than other industries in respect of its development, which differs from the international, competitive nature of other goods. Therefore, increased exportation of manufactured goods apart from silk may be reasonably taken as a more satisfactory measure of the industrial and foreign trade development of Japan.

For the purpose of making a clear analysis, I separate

VALUE (YEN 1,000) AND PERCENTAGE OF FOREIGN TRADE ACCORDING TO CLASSIFICATION OF ARTICLES

IMPORT

Years.	Unfinished Food.		Finished Food.		Raw Materials.		Unfinished Goods.		Wholly Finished Goods.		Others.		Total.	
	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.
1912	49,508	8.0	20,546	3.6	299,354	48.4	122,805	19.8	121,170	19.6	3,608	0.6	618,992	100
1913	77,458	10.6	43,125	5.9	353,542	48.5	126,927	17.4	124,029	17.0	4,351	0.6	729,432	100
1914	52,119	8.7	26,621	4.5	328,741	55.2	96,253	16.2	87,249	14.6	4,753	0.8	595,736	100
1915	20,008	3.7	18,134	3.4	239,886	63.8	98,377	18.5	51,473	9.7	4,623	0.9	532,450	100
1916	14,673	1.9	16,774	2.2	431,904	57.1	201,561	26.7	85,002	11.2	6,514	0.9	756,428	100
1917	20,285	2.9	16,560	1.6	564,610	54.5	322,507	31.1	103,705	10.0	8,144	0.8	1,030,811	100
1918	128,654	7.7	46,853	2.8	855,138	51.3	457,643	27.4	169,374	10.2	10,483	0.6	1,668,144	100
1919	259,703	12.0	7,620	4.2	1,093,754	50.3	451,387	20.8	261,161	12.0	15,835	0.7	2,173,460	100
1920	129,079	5.5	93,325	4.0	1,260,106	53.9	509,067	21.8	328,400	14.1	16,198	0.7	2,336,175	100
1921	114,606	7.1	93,723	5.8	757,020	46.9	324,058	20.1	311,469	19.3	13,279	0.8	1,614,155	100
1922	195,357	10.9	94,870	5.0	828,048	43.7	390,572	20.6	366,379	19.3	16,073	0.5	1,890,308	100
1923	167,120	8.4	84,428	4.2	997,587	50.2	358,781	17.5	362,961	17.7	16,186	2.0	1,987,063	100

EXPORT

1912	22,203	4.2	32,810	6.2	44,461	8.4	265,043	50.3	155,731	29.6	6,735	1.3	526,982	100
1913	24,655	3.9	37,488	5.9	51,340	8.1	328,084	51.9	184,914	29.2	5,979	1.0	632,460	100
1914	26,105	4.4	37,418	6.4	45,492	7.7	306,360	51.8	167,890	28.4	7,837	1.3	591,101	100
1915	37,434	5.3	42,683	6.0	45,423	6.4	323,401	45.7	242,867	34.3	16,199	2.3	708,307	100
1916	47,336	4.2	57,220	5.1	59,014	5.2	540,924	48.0	380,723	33.8	42,251	3.7	1,127,469	100
1917	73,498	4.5	98,690	6.2	81,484	5.1	725,577	45.3	588,155	36.7	35,602	2.2	1,603,005	100
1918	92,375	4.7	117,785	6.0	101,822	5.2	757,263	38.6	853,825	43.5	39,031	2.0	1,962,101	100
1919	64,816	3.1	84,846	4.0	109,270	5.2	906,131	43.2	901,424	43.0	32,387	1.5	2,098,873	100
1920	44,992	2.3	97,289	5.0	140,105	7.2	678,571	34.8	962,934	49.4	24,504	1.3	1,948,395	100
1921	30,288	2.4	49,894	3.9	79,409	6.4	550,727	44.0	524,175	41.8	18,845	1.5	1,252,838	100
1922	43,725	2.8	60,671	3.6	84,736	5.1	842,431	51.4	581,956	35.5	23,933	1.6	1,637,452	100
1923	36,992	2.8	52,099	3.5	81,088	5.6	700,761	48.4	557,716	37.4	17,093	2.3	1,447,749	100

raw silk from unfinished articles in the following table and get the following figures :

	1912-14 (average).	1915-18 (average).	1919-22 (average).	1923.
1. Food and drink	10.3	10.5	6.8	6.3
2. Raw materials and un- finished articles	30.8	28.2	18.4	14.8
3. Raw silk	28.6	21.6	30.9	39.2
4. Wholly finished articles	29.1	37.1	42.4	37.4
5. Miscellaneous	1.2	2.6	1.5	2.3

In looking over the foregoing table we notice the remarkable change of character of the export trade which has taken place before and after the War. It is hardly possible to overlook the striking difference which has occurred between (1)-(2) and (3)-(4) in the course of the past twelve years. Number (2), which was the highest percentage amongst all others before the War, even apart from raw silk, dropped rapidly to less than half of the pre-war percentage, and the same steady downward tendency will be seen in number (1). This undoubtedly shows that the increase of population in Japan and the standstill of agriculture caused by other industrial development in recent years, have created a great demand for home-produced foodstuffs and have checked their exportation. Before the War materials were exported in a raw and unfinished state and re-imported as finished goods, as the industries in Japan at that time were not developed enough to turn out finished goods. But this state of affairs changed rapidly after the War, and half of what Japan used to export in an unfinished state is now kept at home for manufacturing purposes.

The matter can be seen more clearly if we take a look at the details of the above (1) and (2). The principal items in (1) are tea, aquatic products, beans, peas, sugar and beer, the value of which amounts to almost 85 per cent of the total export of (1) in 1923. Tea produced in Japan is mainly green tea, and differs greatly in flavour and bouquet from that of China and India, and appeals more to American taste than European. In spite of the rivalry between Indian

and Chinese tea, the market for Japanese tea has been quite favourable, especially in the Formosan tea trade. The total export of tea was yen 13,464,000 in 1912, yen 10,075,000 in 1913 and yen 17,826,000 in 1922, yen 16,013,000 in 1923 and yen 12,761,000 in 1924, of which 80 per cent was consigned to America. Although the value of tea exports increased after the War it can hardly be said to be an indispensable article, but rather a luxury. In contrast to the standstill of agriculture, fishery in Japan seems to have great future prospects, because of the vast improvement in the storing system of marine products and of the many fishing places round Japan. Exports of this product are steadily increasing; returns show yen 11,690,000 in 1912, yen 11,935,000 in 1913, yen 16,286,000 in 1922, yen 19,894,000 in 1923 and yen 24,624,000 in 1924. As to export of beans and peas, the value has been decidedly less than of the former two articles, but it should be known that the largest part is due to the re-export of Chinese and Kwantung beans and peas. The most striking figure in the group of foodstuffs is that of sugar export (refined sugar), amounting to yen 14,743,000 in 1923 and yen 28,678,000 in 1924, which being almost ten times more than that of fifteen years ago, shows it to be one of the most successful industries which have been undertaken in Formosa, one of Japan's first colonies. It should, however, be known that the sugar industry cannot be called merely agricultural, but rather a food manufacturing industry which needs up-to-date machinery and vast investment of capital for large-scale production, also that the industry is not a Japanese enterprise at all, but quite exclusive to Formosa. Therefore, because of the rapid increase of population and the agricultural standstill and the development of other industries, the most important and indispensable foodstuffs, such as rice, wheat, eggs and vegetables, which have been the main products of Japanese agriculture, no longer hold an important position in export. It is obvious that the export of "food and drink" is mainly dependent upon "finished foods," such as sugar, tinned foods and marine products and beer, taking the place of raw foods.

EXPORTS OF "FOODS AND DRINKS"
(YEN 1,000)

Articles.	1913.	1919.	1920.	1921.	1922.	1923.	1924.
Rice	4,372	4,327	5,902	3,375	1,656	1,162	1,546
Beans and peas	2,289	31,975	10,614	4,036	7,148	7,442	8,673
Marine products	11,935	16,191	17,342	14,569	16,286	19,894	24,624
Starch	115	12,744	4,996	433	1,442	201	251
Tea	10,075	18,402	17,112	7,718	17,828	16,013	12,761
Sugar (refined)	15,831	21,627	30,592	15,799	19,092	14,743	28,678
Beer	2,198	7,200	4,568	5,800	3,358	3,306	2,188
Tinned stuffs	—	9,182	7,945	5,916	6,606	6,127	8,275

Regarding raw materials and unfinished articles (with the exception of raw silk), cotton yarns, coal, woods, camphor, waste silk and plaits for hats are the principal items, and account for nearly 87 per cent of the whole value of exports in this group. Although coal is the chief mineral product which Japan exports, the volume and value of its export have been decreasing. Camphor is an important product of Formosa and is under State monopoly, but it has less importance than cotton yarn from the trade point of view. The decrease in the export of cotton yarns during the last few years is most significant. The reasons of the decline may be roughly divided under two heads, namely, (1) the recent development of the cotton industry in China and India, which have been the principal customers for Japanese yarns, and (2) progress of cotton-weaving industry in Japan, which creates a large home demand. The export of timber has decreased, owing to increasing home demand for it for building and other purposes, also to the subsequent rise of prices of all woods in Japan. On the other hand, the increasing figures of timber imported are the most significant in the trade tables during the last few years. Plaits for hats are the typical product of Japanese family work. The decrease of plaits export is nothing more or less than a reflection of the recent decay of family works in Japan. Exports, which were yen 15,691,000 before the Great War and yen 20,000,000 in 1919-1920, decreased rapidly to less than yen 10,000,000 in 1923-1924.

EXPORTS OF MAIN ITEMS OF "RAW MATERIALS AND UNFINISHED GOODS" (EXCEPTING RAW SILK)

(YEN 1,000)

Articles.	1913.	1919.	1920.	1921.	1922.	1923.	1924.
Waste silk	8,031	27,558	27,543	10,367	14,510	10,461	20,513
Coal	23,628	37,723	45,200	37,814	23,513	21,541	22,366
Timber	8,451	23,996	29,129	15,326	14,161	12,258	13,474
Cotton yarns	70,997	114,232	152,393	80,568	114,723	78,511	109,605
Iron	399	18,988	13,453	6,811	4,892	4,408	6,481
Plaits for hats	15,691	20,014	21,960	7,030	11,293	9,981	9,169
Camphor	2,235	7,883	4,965	2,870	7,246	8,877	—

What is the cause of the decrease in export of raw materials and unfinished goods? The answer is that raw materials and unfinished goods are no longer so profitable for export, and that such exports have been checked by competition from cheap foreign-made goods of similar kind, and also because manufacturing industries which need these goods have recently developed. It is therefore obvious that the percentage lost has been recovered on "wholly finished articles" and raw silk. The change in the position of manufactured goods in Japan's foreign trade is a silent witness as to the direction of the recent development of Japanese industries.

Before going into details of manufactured goods, it is convenient to observe the position which the textile industries hold in Japanese export trade. Cotton yarns and raw silk are included in the category for the sake of discussion regarding the general development of the textile industries.

PERCENTAGE WHICH EXPORTS OF TEXTILE GOODS HOLD ON THE TOTAL OF EXPORT VALUE

	1913.	1919.	1921.	1922.	1923.
Raw silk	29.87	29.71	33.19	41.00	39.20
Waste silk and silk fabrics	7.94	8.69	7.97	8.53	6.35
Cotton yarns	11.22	5.44	6.45	7.92	4.79
Cotton fabrics	5.35	13.35	16.25	15.34	14.33
Other textile goods	2.62	2.63	1.98	1.86	1.78
Total	57.00	59.82	65.84	74.65	66.45

In the foregoing table the first thing noticed is that textile goods, headed by silk and cotton, have the greatest percentage of the total*export value, especially after the Great

War, when conspicuous progress was experienced, e.g. the percentage was 74.65 in 1922 and 66.45 in 1923, while it was 57.00 before the war. Special attention must be paid to the contents of the percentage, the increase of which is totally due to raw silk and cotton fabrics. The percentage of the latter has increased about three times as compared with before the War, which is a direct reflection of the rapid growth of the cotton industry in Japan, while waste silk and silk fabrics, cotton yarns and other textile goods, which include woollen and hemp goods, are stationary or gradually diminishing. This undoubtedly means that recent Japanese enterprise has shown a striking tendency to concentrate on raw silk and cotton weaving industry.

Apart from the textile goods, the chief lines of export are :

VALUE OF MAIN MANUFACTURED GOODS FOR EXPORT
(INCLUDING TEXTILE GOODS)
(YEN 1,000)

	Articles.	1913.	1919.	1920.	1921.	1922.	1923.	1924.
Group 1.	Insulated electric wire	251	8,411	8,043	3,273	7,816	1,609	1,365
	Iron manufactured goods	699	25,001	21,069	9,112	10,321	11,409	13,119
	Machinery	—	16,722	16,710	12,883	14,425	9,202	10,562
	Watches and clocks	993	1,831	1,359	950	1,422	1,296	—
Group 2.	Oil and wax	9,992	35,450	32,534	7,889	12,478	10,921	—
	Hosiery	9,013	39,070	36,043	12,891	17,666	21,205	22,015
	Paper	—	25,402	23,124	18,939	16,127	15,167	15,560
	Cement	655	6,544	10,059	7,078	3,907	2,009	2,364
	Glass and glass manufactures	3,318	19,680	23,238	9,797	10,308	10,118	13,972
	Rubber tyres	—	7,114	8,018	4,478	5,999	3,899	3,233
Group 3.	Dyes and coating and filling matters	497	9,278	8,796	6,168	5,628	3,982	—
	Matches	11,864	32,968	28,454	16,239	15,562	10,649	9,212
	Hats	5,619	8,579	6,817	3,456	5,555	3,941	4,816
	Buttons	3,311	10,285	9,982	4,136	6,400	7,268	8,955
	China and porcelain	6,637	22,629	31,452	20,791	21,210	23,460	25,427
	Toys	2,489	13,001	21,189	7,003	7,414	7,140	8,292

We have now divided the main items of manufactured goods for export into three groups. Group 1 represents mechanical and engineering industries which have been mostly developed during and after the Great War with modern machinery. Group 2 represents the industries which are dependent upon machines more than upon hands.

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Group 3 includes, besides those mentioned in the above table, special Japanese products classified as "miscellaneous articles" in the official trade reports. Needless to say that these goods are mainly produced by hand.

As shown in the following table, before the War the most important part of Japanese export was Group 3. The other groups were far below it in value, especially exports of machinery, paper and rubber tyres, which were then not quite developed. However, after the War the position of the groups was entirely altered. Group 2 takes the first place, and 3 shows a gradual decrease in the value as well as the volume of all items, with the exception of a few such as china, porcelain and toys.

EXPORTS OF MANUFACTURED GOODS (EXCLUDING TEXTILES)

All Goods which come under:	1913.		1918.		1923.	
	Value. (Yen 1,000).	P.C. ¹	Value. (Yen 1,000).	P.C. ¹	Value. (Yen 1,000).	P.C. ¹
Group 1.	10,032	1.69	159,250	8.12	34,930	2.13
Group 2.	42,791	7.24	161,325	8.22	94,294	5.76
Group 3.	63,021	10.66	117,130	5.98	80,905	4.93

Note.—P.C. ¹=Percentage of the Total Value of Exports.

Generally speaking, the industries represented in Group 3 come largely under the so-called sweating system, by which employers used to be able to engage workers at the lowest possible wage and exploit them mercilessly. However, owing to the keen competition of industries in this class in China and India, also to the fact that employers are no longer able to obtain sufficient sweated labour in Japan, business conditions have become very unstable. It is obvious that exports have changed from those that were produced mainly by hand to those produced by machinery.

It has now been made clear that the recent progress of manufacturing industries has been concentrated on textile, and that the old Japanese minor industries of special native products have yielded the leading position to those included in Group 2, which produce goods commonly demanded by international markets.

§ 2. IMPORTS OF FOODS AND RAW MATERIAL

The import trade is chiefly confined to articles coming under the following three classes: (1) Food and drink, (2) Raw material and unfinished goods for further use in manufacturing and (3) Manufactured goods.

VALUE (YEN 1,000) AND PERCENTAGE OF IMPORT TRADE

Articles.	1912-14 (average).		1915-18 (average).		1919-22 (average).		1923.	
	Value.	P.C. ¹	Value.	P.C. ¹	Value.	P.C. ¹	Value.	P.C. ¹
1. Food & drink*	87,792	13.7	67,935	6.3	268,071	13.6	251,548	12.6
2. Raw material and unfinished goods	442,531	68.5	667,431	82.5	1,378,503	69.5	1,256,368	67.7
3. Wholly fin- ished goods	110,816	17.1	102,389	10.3	316,602	16.2	262,961	17.7
Miscellaneous	4,288	0.7	7,439	0.9	15,348	0.7	16,186	2.0

Note.—P.C.¹=Percentage of the Total Value of Imports.

On comparing the above table with the one given at the beginning of § 1 of this chapter, it is interesting to observe that the percentage which "raw material and unfinished goods" and "wholly finished goods" hold respectively in the total reverses itself. Needless to say the difference springs naturally from the fact that the recent development of manufacturing industries in Japan causes a great demand for raw material and those finished articles which Japan does not herself produce.

The importation of foodstuffs steadily increased from 1890 up to the Japanese-Russian War (1904-1905), after which a heavy duty was imposed on foreign food for the purpose of protecting home agriculture. Imported sugar and foreign rice suddenly decreased on account of the protective policy. However, the import of other foodstuffs has slowly but steadily increased, in spite of the high tariff, as the sudden development of industrialism in Japan after the war with Russia caused the cost of food production to rise.

With the Great War, Japanese agriculture flourished as all other industries did, and home production temporarily increased owing to the high price of food. As a consequence,

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the imports of food during 1915-1916 decreased as compared with those of 1912-1914, showing yen 67,935,000, or 6.3 per cent of the total in the former period, and yen 87,792,000, or 13.7 per cent in the latter. But the industrial and commercial development of Japan during the War was the most striking event recorded for the last half century, and labour and capital were concentrated on industrial enterprises, even to the withdrawal of capital from agriculture, and the food problem in Japan has become serious, owing to insufficiency of products and their high prices. At present agricultural products in Japan are as dear as in war time, although foreign foods have been imported to an increasing degree, in spite of the high duty, and are recovering their pre-war percentage, especially those such as meat and eggs, which have been exempted from duty since 1920.

The principal items in this group are as follows :

VALUE (YEN 1,000) OF IMPORTS OF PRINCIPAL FOODSTUFFS

Years.	Rice.	Wheat.	Beans and Peas.	Eggs.	Raw Sugar.	Fish and Meat (unsalted).
1909-13 (average)	23,723	7,041	11,112	1,400	17,847	8
1916-18 "	33,119	3,988	12,337	1,287	19,553	361
1919	16,207	38,530	35,302	3,526	58,183	1,798
1920	18,059	28,505	47,653	11,070	60,212	6,416
1921	28,812	31,551	24,691	17,985	69,815	7,550
1922	61,275	58,901	39,607	17,848	63,944	9,104
1923	30,718	47,433	51,163	17,111	51,632	11,099
1924	70,811	73,683	60,386	15,120	63,846	—

Rice is chiefly imported from British India and French Indo-China, though the amount fluctuates greatly according to the quantity produced at home. Soya beans are almost exclusively imported from China (Kwantung Province), and this trade has expanded remarkably in recent years. With the development of the sugar refining industry in Japan, the importation of raw sugar has increased greatly. Of all those mentioned the most striking increase has occurred in the import of wheat, eggs and meat.

As to the imports of raw materials and unfinished goods, raw cotton is the most important, not only in this group but also among all the imports of the country. With the

growth of the cotton industry the importation¹ of raw cotton has increased year by year. At present British India occupies the premier position as a source of supply, followed by the United States and China. Imports stood at yen 604,530,000 in 1924, or 24.7 per cent of the total imports, and yen 513,172,000 in 1923, or 25.8 per cent, while it amounted only to yen 233,598,000 in 1913 and yen 2,221,000 in 1888.

In spite of the rapid increase of raw cotton, the imports of cotton yarns have decreased, owing to the recent progress of the cotton industry in Japan. On the other hand, raw wool and woollen yarns have been imported in great volume since the War, owing to the spread of Western fashions in Japan—Australia, South Africa and England being the main sources of supply. A striking increase is also shown in the imports of timber, although its value in 1924 was mainly due to the sudden demand for building material caused by the earthquake. The recent steady increase of coal and mineral oil imports shows the dearth of fuel in Japan. Other important imports are oil cake, raw rubber, China grass, phosphorite and pulp, the values of which are given below together with the above mentioned :

IMPORTS OF THE MAIN ITEMS OF RAW MATERIAL AND UN-FINISHED GOODS (YEN 1,000)

Articles.	1913.	1919.	1920.	1921.	1922.	1923.	1924.
Raw cotton	233,599	667,866	721,437	438,172	427,840	513,172	604,530
Raw wool	15,997	61,304	121,629	32,202	55,367	80,011	88,026
Woollen yarns	10,086	688	7,671	15,172	48,471	73,855	63,458
Timber	2,617	10,887	23,459	43,476	84,820	89,521	128,749
Crude oil	11,101	21,675	21,272	16,721	18,789	15,281	14,032
Petroleum benzine	129	2,746	6,185	5,999	11,243	11,651	16,988
Pulp	4,620	10,687	13,190	8,829	11,755	6,333	10,623
Coal	4,034	18,588	19,917	14,092	16,818	24,351	28,625
China grass	7,355	16,782	15,228	14,660	17,409	17,496	26,660
Raw rubber	3,451	17,364	13,422	15,724	11,315	19,325	23,330
Phosphorite	8,617	8,576	17,099	8,884	8,983	4,854	9,175
Oil cake	39,498	135,188	150,904	94,311	98,522	109,646	102,941

¹ IMPORTS OF RAW COTTON

Years.	Quantity (Picul).	Value (Yen).
1888-92 (average)	666,428	6,755,943
1903-07	3,521,918	90,373,027
1908-12	4,498,658	140,878,540
1913-17	7,121,191	215,390,908
1918-22	8,010,479	552,175,359
1923	8,768,700	513,172,438
1924	—	604,530,000

(Picul = 132.28 lbs.)

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Imported manufactured goods are roughly divided into four classes: (1) textile goods, (2) machinery and metal manufactures, (3) chemical products and (4) others.

Among textile goods the most important are woollen cloths and serges, which are imported from England. Although the recent development of the woollen industry in Japan is noteworthy, it is not yet able to meet the home demand for superior cloths, which have still to be imported. Cotton shirtings and sheetings are decreasing, owing to the ample supply of home-made goods.

IMPORTS OF COTTON AND WOOLLEN MANUFACTURED GOODS

Years.	Cotton Goods. Yen.	Woollen Goods. Yen.
1912	10,083,000	12,444,000
1919	7,000,000	12,301,000
1920	15,024,000	31,270,000
1921	8,752,000	31,083,000
1922	13,569,000	49,953,000
1923	7,483,000	46,600,000
1924	12,036,000	61,818,000

Among metal manufactures and machinery, the chief articles are material for railway construction and buildings, locomotives, engines and motors, electric spinning machines and various other kinds of machinery, iron and steel pipes, tubes, plates and sheets, etc., other metals being of less importance. Taking machinery and parts thereof, iron plates, sheets and other iron and steel goods, these make about 14.5 per cent of the total import trade in 1924, as compared with 11.6 per cent in 1913.

IMPORTS OF MACHINERY AND IRON AND STEEL GOODS

Years.	Machinery. Yen.	Iron and Steel Goods. Yen.
1913	36,762,000	58,349,000
1919	89,222,000	251,038,000
1920	110,571,000	279,222,000
1921	119,882,000	157,680,000
1922	114,371,000	167,430,000
1923	102,241,000	131,083,000
1924	138,660,000	216,798,000

Detailed items of this group are given below in comparison with the pre-war period :

Imports of :	1913. Yen.	1923. Yen.
Watches and clocks and parts thereof	1,226,767	6,303,546
Scientific instruments and appliances	2,665,658	12,794,718
Vehicles and vessels	10,387,699	40,162,372
Machinery and parts thereof	36,761,978	102,241,306
Iron and steel goods	58,349,094	131,083,361
Metal manufactures	15,345,569	36,103,681

NOTE.—Quantities of these goods are unavailable.

Besides these principal imports, there remain chemical products, imports of which increased from yen 39,603,000 in 1913 to yen 97,055,000 in 1923. Glycerine, sulphate of ammonium, nitrate of soda, soda ash, caustic soda, carbolic acid and aniline dyes are the main items of this group.

IMPORTS OF CHEMICAL PRODUCTS

Articles.	1913.		1919.		1923.	
	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.
Aniline dyes	4,213	7,362	10,629	2,069	9,786	7,978
Glycerine	652	1,431	3,458	3,103	1,243	2,919
Sulphate of ammonium	15,992	185,866	27,435	168,720	24,950	242,884
Nitrate of soda (crude)	2,911	44,542	13,294	81,509	8,196	111,688
Soda ash	—	—	6,198	102,862	4,458	153,305
Caustic soda	1,314	20,268	7,483	60,089	3,152	31,799
Carbolic acid	251	739	4,337	4,649	1,073	1,851

(,000 yen in value and ,000 kin in quantity omitted.)

Summarizing the above we come to the conclusion that the general tendency of the import trade of Japan is absolutely the reverse of what has been mentioned regarding Japan's export trade. In other words, the rapid increase of imports of raw material and machinery shows most clearly the development of manufacturing industries under the factory system. Japan must import machinery and iron and steel goods at present to a great extent owing to her lack of iron ore and insufficiency of fuel. These goods are quite different in an economic sense from articles of

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consumption, as they are to be regarded as productive imports. If we take machinery, iron and steel goods, metal manufactures into account, together with raw material, it is seen that they account for about 80 per cent of the total importation. It can be said, therefore, that the national economy of Japan is not able to be independent of foreign goods, which are indispensable to Japanese industries.

CHAPTER III

DISTRIBUTION OF TRADE

WITH this change in the character of foreign trade, another important change has been brought about in the geographical distribution of the trade.

§ I. CONTINENTAL CLASSIFICATION

First let us investigate the following table, which gives a rough idea of the subject apart from political divisions. The table shows clearly that the position between European countries and Japan has completely altered its importance in imports as well as in exports compared with some twenty years ago, so far as the value of Japanese foreign trade is concerned. The overwhelming increase of the trade to the American Continents, and mostly to the United States, has been remarkable. The percentage which America held in Japanese exports was 32·45 per cent in 1902 and 47·91 per cent in 1923. Although it decreased to 42·28 per cent in 1924, it still remained at the top of the groups, being higher than the 41·86 per cent of Asia. In imports, America comes next to Asia, the former holding 29·02 per cent and the latter 40·68 per cent in 1924. Thus, putting the two groups together, it may be seen that they amount to over 80 per cent in imports and over 84 per cent in exports of the Japanese foreign trade, while Europe and others have only 20 per cent in imports and 16 per cent in exports during recent years, in spite of the fact that Europe itself took about 26 per cent of the exports and contributed about 34·56 per cent of the imports in 1902. Judging from these facts the importance of the Japanese foreign trade, which used to be distributed among European countries to

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a great extent before the War, has now spread itself eastwards, and the position which China, India and the United States hold in Japanese trade is more important than that of the rest of the world.

THE GEOGRAPHICAL DISTRIBUTION UNDER THE FOUR GROUPS IN REGARD TO PERCENTAGE

Years	EXPORT.				IMPORT.			
	Asia.	Europe.	America.	Others.	Asia.	Europe.	America.	Others.
1902	39·20	25·94	32·45	2·41	45·40	34·56	14·41	5·73
1910	39·54	23·53	32·89	4·04	42·29	37·67	15·88	4·16
1913	43·62	23·28	30·05	3·05	47·70	30·20	17·03	5·07
1916	44·83	19·20	31·30	4·67	48·69	14·34	27·20	9·77
1918	47·68	15·20	28·53	8·59	48·72	4·96	38·01	8·31
1920	51·22	10·04	30·44	8·30	40·35	13·07	37·61	8·97
1921	49·49	6·03	40·88	3·60	3·60	17·47	36·56	4·77
1922	41·05	9·69	46·40	2·82	38·99	21·91	33·13	5·97
1923	40·86	5·69	47·91	5·54	41·73	22·89	29·11	6·27
1924	41·86	9·68	42·28	6·18	40·68	23·67	29·02	6·63

§ 2. THE LEADING COUNTRIES

Having seen the distribution on a large scale we have now to look at further details. Until about 1886, according to the following table, the trade of Japan was confined almost exclusively to five countries, viz. the United States, England, China, France and Germany. In the export trade the United States led with 42 per cent of the total in 1880, China followed with 22 per cent, and then came France and England with percentages respectively of 19 per cent and 9 per cent. The share of Germany was insignificant. Imports from England were 53 per cent in the same year; from China, France, the United States and Germany respectively 15 per cent, 10 per cent, 7 per cent and 4 per cent. Prior to 1886 the United States was at a disadvantage in having no facilities for direct transport, so that Japan's import trade was chiefly with England. As late as 1890 more than one-half of Japanese foreign trade was carried by British vessels. At that time commercial transactions with any of the Asiatic countries except China were quite insignificant.

Since then, however, the internal affairs in Japan having been put in order and the foreign market having become known, the public has turned its attention more and more

to the external side of commercial relations rather than to domestic trade. In the evolution of Japanese foreign trade in the years that followed, the change in distribution also has been significant. Imports from England, though they amount to an enormous sum at the present time, have tended relatively to decrease, while a great increase occurred in German trade before the Great War and also in American imports. Another prominent feature has been the expansion of Japan's trade with Asiatic countries.

At present, of all the trade carried on by Japan with foreign countries, that with China, including the Kwangtung Provinces, Hongkong, the Philippines, British India, the Straits Settlements, Indo-China, Siam and the Dutch East Indies, is the most important. In the trade with the four first-named countries, the exports exceed the imports, owing to the outgoing of large volume of cotton piece goods, cotton yarns, coal, copper manufactures, porcelain and earthenware, lacquered wares, umbrellas and parasols and matches ; while the last five countries' imports exceed the exports, owing to large purchases of raw cotton from India, rubber from Straits Settlements, rice from Indo-China and Siam, and sugar from the Dutch East Indies. Needless to say Japan's most important customers in Asia, in respect of foreign trade, are China and British India, especially from the point of view of exports.

In regard to the trade with European countries, Great Britain, Germany, France and Italy are the principal nations. However, what must not be overlooked is the exceedingly "adverse" balance of trade with the two first-named countries. Japan's exports to European countries are highly specialized, such as silk, straw plaits, lacquer wares, and those in which Japanese artistic skill and handiwork play a great part ; while she imports iron and steel manufactures, machinery from Great Britain and Germany of enormous value, and woollen cloths from the former and chemical products and scientific and medical necessaries from the latter, of considerable value.

The increasing degree in which the United States has been participating in Japan's foreign trade both in imports

DISTRIBUTION OF JAPANESE EXPORT TRADE IN VALUE (YEN 1,000) AND PERCENTAGE

Countries.	1902.		1913.		1921.		1922.		1923.		1924.	
	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.
ASIA.												
China	46,838	18.1	154,661	24.4	287,227	22.9	333,520	20.3	272,927	16.6	348,399	18.7
Kwantung Prov.	—	—	29,836	4.7	77,569	6.2	71,858	4.1	68,264	4.8	72,191	3.9
Hongkong	25,876	10.0	33,622	5.3	59,304	4.7	65,421	3.9	55,478	3.8	79,010	4.3
British India	5,067	1.9	29,873	4.7	84,504	6.7	97,203	5.9	100,960	6.9	135,373	7.2
Straits Settlements	8,269	3.2	10,142	1.6	21,740	1.7	21,341	1.1	21,030	1.4	22,743	1.2
Dutch East Indies	570	—	5,149	0.8	54,210	4.3	47,400	2.9	40,828	2.8	59,334	3.3
French Indo-China	158	—	1,055	0.1	1,023	0.1	1,098	—	1,564	—	2,438	0.1
Asiatic Russia	2,145	0.8	4,271	0.6	13,741	1.1	10,934	0.6	4,528	0.3	3,563	0.2
Philippine Islands	1,732	0.6	6,284	0.9	17,921	1.4	17,773	1.0	17,680	1.1	23,508	1.2
Siam	56	—	1,035	0.1	2,652	0.2	5,598	0.3	3,866	0.2	4,178	0.2
EUROPE.												
Great Britain	17,346	6.7	32,870	5.2	32,772	2.6	54,437	3.3	43,251	2.9	61,044	3.3
France	27,283	10.5	60,230	9.5	35,167	2.8	78,686	4.5	35,123	2.4	85,790	4.7
Germany	4,737	1.8	13,132	2.0	2,217	0.2	3,724	0.2	3,549	0.2	8,564	0.4
Belgium	600	—	3,706	0.5	601	—	1,889	0.1	966	—	3,418	0.2
Italy	13,287	5.4	29,417	4.6	2,318	0.2	5,096	0.3	2,924	0.2	6,226	0.3
Netherlands	745	—	669	—	929	—	1,683	0.1	1,789	0.1	2,897	0.1
AMERICA.												
U.S.A.	80,232	31.6	184,473	29.1	496,284	39.6	732,376	44.7	663,221	45.9	744,622	41.2
Canada	3,485	1.3	5,090	0.8	13,416	1.0	13,687	0.8	14,980	0.9	15,427	0.8
Argentina	—	—	1,423	0.2	346	—	6,516	0.4	7,387	0.4	8,214	0.4
Chile	—	—	—	—	2,328	0.2	363	—	995	—	1,857	0.1
OTHERS.												
Egypt	449	—	1,371	0.2	4,922	0.4	6,423	0.4	18,122	1.1	27,080	1.3
South Africa	—	—	495	—	3,851	0.3	1,015	—	4,749	—	5,764	0.3
Australia	3,172	1.3	8,638	1.3	21,517	1.7	11,643	0.7	34,464	2.4	41,901	2.3
New Zealand	—	—	—	—	1,608	0.1	496	—	2,693	—	2,197	0.1
Hawaii	1,833	0.6	4,992	0.8	7,450	0.6	* 700	—	4,812	—	5,512	0.3

DISTRIBUTION OF JAPANESE IMPORT TRADE IN VALUE (YEN 1,000) AND PERCENTAGE

Countries.	1902.		1913.		1921.		1922.		1923.		1924.	
	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.	Value.	Per-centage.
ASIA.												
China	40,590	14.9	61,223	8.4	191,678	11.9	186,343	9.8	204,678	11.1	237,652	9.6
Kwantung Prov.	—	—	30,878	4.2	111,931	6.9	130,574	6.9	149,784	7.5	175,737	7.1
Hongkong	2,454	0.9	1,295	0.2	1,017	—	690	—	1,734	—	1,099	—
British India	49,302	18.1	173,174	23.7	210,365	13.0	254,088	13.4	308,651	15.5	387,799	15.8
Straits Settlements	1,674	0.6	5,205	0.7	23,835	1.5	18,810	0.9	25,772	1.2	31,340	1.2
Dutch East Indies	6,592	2.4	37,389	5.1	70,427	4.3	71,757	3.7	74,584	3.7	92,401	3.7
French Indo-China	5,650	2.0	24,700	3.4	19,064	1.2	17,598	0.8	10,468	0.5	17,966	0.7
Asiatic Russia	5,963	2.2	750	0.1	6,863	0.4	17,995	0.8	16,987	0.8	15,064	0.6
Philippines	1,474	0.5	7,648	1.0	18,161	1.1	15,378	0.7	14,741	0.7	17,833	0.7
Siam	1,695	0.6	5,793	0.8	11,258	0.7	22,855	1.1	12,232	0.5	18,477	0.8
EUROPE.												
Great Britain	50,364	18.2	122,737	16.8	184,307	11.4	232,310	12.4	247,509	12.5	312,751	12.7
France	4,745	1.7	5,829	0.8	11,691	0.7	18,462	0.9	22,750	1.1	32,771	1.2
Germany	25,813	9.2	68,395	9.3	47,713	2.9	110,622	6.2	124,582	6.2	144,642	5.8
Belgium	6,977	2.7	9,448	1.3	8,110	0.5	14,844	0.6	19,235	0.9	29,384	1.1
Italy	186	—	1,078	0.5	1,763	0.1	2,916	0.1	3,538	0.2	4,421	0.2
Netherlands	772	—	810	0.1	12,828	0.8	3,152	0.1	4,266	0.2	7,911	0.3
AMERICA.												
U.S.A.	48,652	17.8	122,408	16.7	574,401	35.6	596,169	31.5	532,293	26.8	670,993	27.3
Canada	517	—	1,840	0.2	8,946	0.6	16,559	0.8	24,631	1.1	40,024	1.6
Argentina	—	—	—	—	808	—	496	—	1,781	—	2,693	0.1
Chile	—	—	2,773	0.4	2,713	0.2	6,612	0.3	7,401	0.4	5,262	0.2
OTHERS.												
Egypt	2,418	0.9	7,143	0.9	12,220	0.7	10,571	0.5	21,016	1.0	17,014	0.7
South Africa	—	—	46	—	2,862	0.2	326	—	665	—	991	—
Australia	1,672	0.6	14,943	2.0	36,398	2.2	82,090	4.3	98,796	5.2	119,971	4.9
New Zealand	—	—	—	—	5	—	—	—	—	—	—	—
Hawaii	22	—	90	—	132	—	—	—	—	—	—	—

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and exports is most significant, especially so after the War, when the percentage held by America in the Japanese trade rose rapidly, as shown in the tables on pp. 74, 75. Japan buys raw cotton, petroleum, iron and steel manufactures, timber and flour from America, and sells raw silk, silk fabrics, tea, copper and matting. It must be remembered that raw silk, which is the greatest staple product of Japan, amounts to 90 per cent of the total silk exports, by which Japan keeps a "favourable" trade balance with America.

The trade with other American countries, such as Canada, Argentine and Chile, is insignificant compared with that of the United States.

Under the group of "others," the most important is the trade with Australia, whose position in Japanese trade has risen since the War. Silk tissues are the chief commodity exported to Australia and raw wool is the principal import.

In conclusion, generally speaking, the export trade with Europe and America consists of Japanese special products, while that with Asia consists chiefly of general manufactures. Japan, however, is still dependent for the supply of certain kinds of manufactures on Europe and America, more especially for machinery and metal goods, and she depends for the supply of raw material and foodstuffs on Asiatic countries, Australia and the United States.

§ 3. JAPANESE EXPORT TRADE WITH CHINA

Before commencing this subject, I summarize the foregoing tables in the order of leading countries according to the value of the Japanese trade in which they participated.

Since the Great War, the world's attention has been focussed on China politically as well as economically. It is widely believed that it is essential for anyone who desires to secure an economic and political footing in the East to obtain the largest remaining undeveloped market in China, whose population numbers a fourth of the human race. It can be justly said that the present delicate problems in the Pacific seem to have arisen directly or indirectly around the interests of China. Both politically and economically Japan has the greatest interest in Chinese affairs.

It can be seen most clearly in the following tables that China has played a great rôle in Japan's foreign trade. She ranks second in exports of 1913 and up to the Great War, and varies from second to fourth in the imports. Although China comes next to the United States in export value, she may be said to be a more important customer than America in some sense. It must not be overlooked that the main

**RANK OF THE LEADING COUNTRIES IN JAPANESE
EXPORTS**

Years.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
1913	U.S.A.	China	France	H.K. ¹	G.B.	B.I.	K.P.
1918	"	"	B.I.	G.B.	France	K.P.	D.E.I.
1919	"	"	K.P.	B.I.	G.B.	Russia	France
1920	"	"	B.I.	K.P.	D.E.I.	G.B.	H.K.
1921	"	"	"	"	H.K.	D.E.I.	France
1922	"	"	"	France	"	H.K.	G.B.
1923	"	"	"	K.P.	"	D.E.I.	"
1924	"	"	"	"	"	K.P.	"

(B.I., K.P., G.B., D.E.I. and H.K. denote British India, Kwantung Province, Great Britain, the Dutch East Indies and Hongkong respectively.)

**RANK OF THE LEADING COUNTRIES IN JAPANESE
IMPORTS**

Years.	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.
1913	B.I.	G.B.	U.S.A.	Germany	China	D.E.I.	K.P.
1918	U.S.A.	China	B.I.	K.P.	G.B.	F.I.C.	Australia
1919	"	"	"	"	"	"	D.E.I.
1920	"	B.I.	G.B.	China	K.P.	S. Africa	"
1921	"	"	China	G.B.	"	D.E.I.	Germany
1922	"	"	G.B.	China	"	Germany	Australia
1923	"	"	"	"	"	"	"
1924	"	"	"	"	"	"	"

(F.I.C. denotes French Indo-China.)

items of Japanese exports to China are mostly manufactured goods, such as cotton piece goods, matches, paper and machinery, while the vast export to the United States is chiefly raw silk of which Japan is the greatest producer in the world. In other words, China is the market for Japanese general goods, in which industries Japan has developed to a great extent. The increase of trade with China can be looked upon as a reflection of Japan's industrial progress.

¹ Hongkong is classified separately in the official trade returns. It is obvious that great quantities of goods sent to Hongkong are transferred to China, which are roughly estimated 30 per cent of the trade.

EXPORTS AND IMPORTS OF JAPAN WITH CHINA

Years.	Exports (Yen).	Imports (Yen).	Excess of Exports (+) Excess of Imports (-).
1872	4,786,006	9,881,533	(-) 5,095,527
1882	5,711,641	6,553,201	(-) 841,560
1892	6,358,860	12,509,410	(-) 6,150,550
1902	46,838,545	40,590,858	(+) 6,247,687
1912	114,823,727	54,807,116	(+) 60,016,611
1913	154,660,428	61,223,038	(+) 93,437,390
1914	162,370,924	58,305,783	(+) 104,065,141
1915	141,125,586	85,847,735	(+) 55,277,851
1916	192,712,626	108,638,636	(+) 84,073,990
1917	318,380,530	133,271,036	(+) 185,109,499
1918	359,150,814	281,707,333	(+) 77,443,481
1919	447,049,267	322,100,628	(+) 124,948,639
1920	410,270,497	218,088,988	(+) 192,181,509
1921	287,227,081	191,678,314	(+) 95,548,767
1922	333,520,262	186,343,719	(+) 147,176,543
1923	272,190,662	204,678,551	(+) 67,512,111
1924	348,398,787	237,651,625	(+) 110,747,162

This table includes those given under the heading of "China" in the official trade returns. But what must not be overlooked in the trade with China is that this table does not show the actual figure, as the trade with Kwantung Province and Hongkong the figures of which are given separately from "China," is transmitted into the hinterland to a great extent, Kwantung Province acting as a transmitting place for some part of North China. According to the investigation of the Department of Agriculture and Commerce about 60 per cent of the total trade consigned to those places may be included in that of China. Therefore, the proportion shown in the above table must be increased to this 60 per cent of the trade of Kwantung and Hongkong, which, of course, shows the trade to China to be much larger than that officially recorded.

EXPORTS AND IMPORTS OF JAPAN TO KWANGTUNG PROVINCE

Years.	Exports (Yen).	Imports (Yen).
1913	29,836,000	30,878,000
1923	68,264,000	149,784,000
1924	72,191,000	175,737,000

EXPORTS AND IMPORTS OF JAPAN TO HONGKONG

Years.	Exports (Yen).	Imports (Yen).
1913 . . .	33,622,000	1,295,000
1923 . . .	68,262,000	1,734,000
1924 . . .	72,191,000	1,099,000

We can roughly observe by this table how important China is in Japanese foreign trade. Moreover, it is interesting to note the position of Japan in regard to Chinese trade. According to the Chinese Customs returns, Japan comes first in Chinese exports and next to Hongkong in imports so far as the nominal value of Chinese trade is concerned.

CHINESE EXPORT TRADE AND ITS MAIN COUNTRIES
(Value in Haikwan Taels).

	(Value) 1913.	Percentage.	(Value) 1923.	Percentage.
Hongkong	117,129,000	29.0	175,796,000	23.3
British India	6,190,000	1.5	12,329,000	1.6
Straits Settlements	7,553,000	1.9	17,928,000	2.4
Great Britain	16,346,000	4.1	43,207,000	5.7
Germany	17,025,000	4.2	11,916,000	1.6
France	40,750,000	10.1	39,578,000	5.3
Japan (including Formosa)	65,544,000	16.3	198,517,000	26.4
U.S.A. (including Hawaii)	37,650,000	9.3	126,804,000	16.8
Total	403,305,000	100.0	752,917,000	100.0

CHINESE IMPORT TRADE AND ITS MAIN COUNTRIES

	(Value) 1913.	Percentage.	(Value) 1923.	Percentage.
Hongkong	171,636,000	29.3	248,083,000	26.2
Dutch East Indies	6,837,000	1.2	13,600,000	1.4
British India	48,292,000	8.2	55,241,000	5.8
Great Britain	96,911,000	16.5	120,357,000	12.7
Germany	28,302,000	4.8	32,456,000	3.4
Japan (including Formosa)	119,347,000	20.4	211,024,000	22.2
U.S.A. (including Hawaii)	35,427,000	6.6	154,448,000	16.5
Total	586,427,000	100.0	948,634,000	100.0

(Haikwan Taels = 355½d.)

Although Japan has made great strides in the Chinese foreign trade, buying 26.4 per cent of China's exports and

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furnishing 22.2 per cent of her imports in 1923, the United States of America has increased its proportion of the China trade in a much greater degree. The percentages of both Great Britain and Germany have slightly decreased.

The principal items of Japanese goods exported to China have changed during the period of 1913-1923. Before the war cotton yarn was at the top of the list, and then came cotton piece goods, refined sugar, copper, coal, matches, marine products, timber, hosiery goods and paper. In 1923 cotton piece goods replaced cotton yarn in value; refined sugar, copper, matches and hosiery decreased greatly in both value and quantity, while paper, machinery, metal manufactures and marine products increased in each direction. Especially did the exports of copper and matches decrease, and the figures were smaller than in 1913. The decrease of sugar was due to competition by Java, and that of copper to the increase of American goods and the high post-war price of Japanese copper goods. It is noticeable that the downward tendency of matches, hosiery goods, coal and umbrellas, is partly due to the fact that the development of these industries in China has greatly increased. Therefore, it can be seen that there is little prospect in the trade with China for the goods which are the products of industries which need little skill or machinery, but great prospects for those of higher grade.

JAPANESE PRINCIPAL GOODS EXPORTED TO CHINA

Articles.	1913.		1923.	
	Quantity.	Value (Yen.)	Quantity.	Value (Yen.)
Cotton yarn (picul)	1,158,547	60,096,000	364,703	38,503,000
Cotton piece goods (picul)	—	18,965,000	—	100,293,000
Sugar (picul)	1,515,263	14,270,000	980,095	13,681,000
Copper (picul)	219,284	9,401,000	6,019	283,000
Coal (ton)	1,279,366	7,333,000	743,879	9,521,000
Matches (1000 gross)	20,582	4,829,000	352	255,000
Marine products	—	4,660,000	—	8,828,000
Timber	—	3,338,000	—	4,175,000
Hosiery goods	—	1,892,000	—	855,000
Paper	—	1,341,000	—	7,669,000
Soap	—	1,303,000	—	1,392,000
Umbrellas (dozen)	169,655	1,186,000	90,187	1,342,000
Machinery and parts thereof	—	1,206,000	—	5,418,000
Glass goods	—	891,000	—	2,132,000
Silk piece goods	—	675,000	—	2,111,000
Iron manufactures	—	227,000	—	3,755,000

As shown in the above table, of the goods exported to China, cotton piece goods are the most important, holding more than 36 per cent of the total value. The main suppliers of these goods were Japan, Great Britain and the United States before the War. Hongkong occupies an important position as a transmitting port of the cotton trade to China. In pre-war years Great Britain was at the top of the list with a 53 per cent of the total imports of cotton goods by value into China in 1913, while Japan had only 20 per cent and the United States less than 2 per cent. However, with the Great War, Japan made great strides, and her export trade of cotton goods to China multiplied. It is noteworthy that American goods have almost disappeared from the Chinese market since the end of the War. As a consequence, Japan's share of the total cotton imports into China in value has risen from 20 per cent in 1913 to 51 per cent in 1923, while Great Britain's share has fallen from 53 per cent to 38 per cent. It will be seen that these two countries were responsible for 89 per cent of the total imports into China in 1922 and 1923.

COMPARATIVE SHARES, IN VALUE, OF GREAT BRITAIN AND JAPAN OF THE TOTAL IMPORTS OF COTTON GOODS INTO CHINA IN 1913, 1922 AND 1923

Countries.	Actual Shares in Millions of Haikwan Taels.			Percentage Shares.		
	1913.	1922.	1923.	1913.	1922.	1923.
Great Britain	59.6	62.6	50.0	53	42	38
Japan	22.6	69.7	67.5	20	47	51
Total (including other countries)	111.5	147.8	132.0	100	100	100

(From the *Manchester Guardian Commercial*.)

As shown above, both Great Britain and Japan share between them at the present time the biggest portion of China's import trade of cotton goods. It is most interesting to observe the class of goods in which Japan has been competing with England in the Chinese market. In order to investigate this it is best to classify the goods as below :

1. Those which were badly hit owing to Japanese competition since the War, in spite of the fact that English goods enjoyed the supremacy before the War.

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- 2. Those still mainly supplied by Great Britain, although Japan has made progress since the War.
3. Those mainly dependent upon the Japanese supply both before and after the War.

The cotton goods belonging to (1) are shirtings (grey) and jeans ; those in (2) are shirtings (white), Italian and cotton velvets ; those in (3) sheetings (grey). It may be said that the cloth which Japan is making is generally of low grade, and that England would find it impossible to compete ; therefore, English and Japanese goods are not necessarily competitive in the Chinese market. In the meantime, the Chinese cotton industry has developed considerably in respect of low products, and similar Japanese goods have fallen off. In regard to this tendency, Japanese cotton companies have taken serious precautions in order to cope with Chinese competition. As mentioned in the chapter on the cotton industry of Japan, there is one way for Japan to keep her place in the Chinese market, and that is, by the production of high grade goods. When Japan is able to produce work of high standard, competition between England and Japan can hardly be avoided.

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IMPORTS OF COTTON CLOTHS INTO CHINA 1913-1923

(From the Report of the Dept. of Agriculture and Commerce,
February, 1924)

1913. Countries.	1913.		1923.	
	Quantity. (1,000 Biki).	Per- centage.	Quantity. (1,000 Biki).	Per- centage.
Shirtings (grey)				
Japan	95	2.2	1,691	56.7
Great Britain	3,527	80.8	1,010	33.9
U.S.A.	46	1.1	—	—
Hongkong	480	11.0	256	8.6
Total	4,336	100.0	2,982	100.0
Shirtings (white)				
Japan	61	1.3	447	20.0
Great Britain	3,774	68.9	1,431	65.6
Hongkong	716	15.0	272	12.5
Netherlands	114	2.4	9	0.4
Total	4,784	100.0	2,183	100.0
Sheetings (grey)				
Japan	3,356	64.3	1,125	88.7
Great Britain	128	2.5	10	0.8
U.S.A.	1,559	29.9	1	—
Chosen	45	0.9	109	8.6
Total	5,219	100.0	1,269	100.0
Jeans				
Japan	94	5.4	1,703	83.1
Great Britain	1,498	86.2	118	5.8
U.S.A.	38	2.2	—	—
Chosen	4	0.2	37	1.8
Hongkong	41	2.4	189	9.2
Total	1,738	100.0	2,049	100.0
Italians				
Japan	31	0.8	661	43.4
Great Britain	3,150	84.4	723	47.4
Hongkong	337	9.0	126	8.3
Total	3,731	100.0	1,524	100.0
Cotton velvets (1,000 yds.)				
Japan	9	0.1	171	6.2
Great Britain	4,535	68.8	2,231	81.0
U.S.A.	—	—	8	0.3
Hongkong	734	11.1	293	10.6
Total	6,594	100.0	2,753	100.0

(Biki=about 20 yards.)

PART V
THE REPRESENTATIVE INDUSTRIES

CHAPTER I
SILK INDUSTRIES

§ I. RAW SILK

THE silk industry in Japan has been and will continue to be one of the most important and fundamental industries of the nation, not only from the point of view of silk being one of the biggest items of export, but also because of the industry's old establishment. Although the cotton industry has shown such rapid progress and now occupies the most important position amongst industries, its existence depends wholly upon the import of raw cotton, and its products are subject to keen competition in foreign markets, whereas the silk industry is able to obtain ample supplies of raw material at home, and has so far been a serious competitor in foreign markets; thus it is in a much easier and safer position.

It will easily be seen on looking at the huge figures of raw silk exports how important and indispensable this industry has become. According to the latest report the value of raw silk exports during 1921 amounted to yen 417,120,000, yen 671,365,000 in 1922 and yen 568,370,000 in 1923, and these values represented 39 per cent, 41 per cent and 39·2 per cent respectively of the total values of the whole exports of these years. Therefore, it is obvious that the ebb and flow of this industry has a great bearing on the national economy.

General History of the Silk Industry.

The silk industry of Japan originated as early as 480 B.C., but whether it was on a commercial basis at that time is not certain. The first stage of development was during the reign of the Emperor Chu-Ai, about A.D. 200, and the warm encouragement given by subsequent Emperors and Empresses had a great deal to do with the rapid progress realized after that period.

The first silkworms were introduced into Japan from China, and a Chinese subject, by name Tsudzuki-no-Kimā, came to Japan about A.D. 280, bringing with him some of his countrymen, who were well trained in the industry. These men were distributed among the various districts of Japan, and were asked by the then Emperor, O-Jin, to take up silkworm rearing and silk spinning. This took place some 1640 years ago, and the real origin of the industry may be said to date from that period.

It must be remembered that the improvement and progress of the industry have been due to the aid and encouragement of the Government, which has been its sole support right from its origin up to the present time.

After the introduction of silkworms from China the whole country took a great interest in sericulture, and from time to time decrees and regulations regarding the industry were made. An Imperial decree was issued in the reign of the 21st Emperor, Yu-Ryaku (A.D. 457-480), encouraging the cultivation of mulberry trees in all places fit for such plantation. In the Celebrated Constitution of Prince Sho-Toku, mulberry trees were planted according to the class of land, viz. 300 trees in the first class, 200 and 100 in the second and third classes respectively.

Up to this period the silk industry had been limited to the central and south-western districts of Japan; but during the reign of the 43rd Empress, Gem-Myo, most of the rich families in the central part of Japan removed to the north-eastern parts, and in consequence the industry moved with them. It can, therefore, be said that the origin of the silk

industry in the north, which is now its most important centre, dates from that time.

In the reign of the 60th Emperor, Daigo, some 1000 years ago, the districts producing silks of a superior quality were in the central and south-western regions rather than in the north-east; thus, it will be noted that the geographical distribution of the industry at that period was quite different from its distribution to-day. The reason why the central and south-western districts flourished was mainly the fact that they are nearer to China. Furthermore, the growth of the industry in Central Japan was also encouraged by the fact that the capital was not removed from either Kyoto or Nara up to the time Tokio was made the capital.

It is an undeniable fact that the success of any industry depends largely upon the political vicissitude of a country. The central and south-western parts offered favourable conditions for the general development of the industry, and the system of paying taxes in silk fabrics induced the people to make strong efforts for the production of silk. But from the end of the 12th century until the end of the 16th century the country was disturbed by civil discord and wars were frequent, whilst farmers were overburdened with heavy taxes and their men called up for military service.

In this state of affairs it was but natural that such a delicate industry as silk should have no attention paid to it. Another drawback was the prevalent use of cotton clothing, which had superseded the use of silk fabrics.

Towards the close of the 16th century, however, peace began to prevail in the country, and was finally brought about by the establishment of the Tokugawa Shogunate. Industry of every description received fresh encouragement. The silk industry once again resumed its long suppressed development, but as the result of the frugality which was the fundamental principle in all State affairs of the successive Shogun, the use of silk for clothing was permitted only to Samurai, and common folks were prohibited from wearing it. This naturally lessened the demand for silk. By this time the centre of the silk industry had moved somewhat in a north-easterly direction.

At the end of the Tokugawa Shogunate and upon the opening of the Yokohama port for foreign trade at the beginning of the Meiji era, the silk industry of Japan suddenly began a new period of development. Wide markets now were opened, and the ever-increasing demand for Japanese silk gave a fresh stimulus to the development of the industry. The amount of silk exported year after year has enormously increased until at present it holds the foremost place among exports from Japan, and both the Government and the people are doing their utmost to encourage and improve the industry.

The silk of fifty years ago was inferior to that of the present day. A greater part of the silk at that time was reeled from yellowish cocoons, and consequently assumed a yellowish tint, which, however, not being greatly admired by the dealers concerned, gradually gave place to white silk, so that at present the latter enjoys a unique importance in the industry.

The Government have frequently sent abroad experts in order to make investigations and also to observe the state of the silk industry in Europe and America, and foreigners have often been employed for the further betterment of the industry. Thus governmental encouragement and aid, combined with energetic endeavours on the part of silk industrialists at large, have brought forth the present prosperity and state of development. But it must be remembered that there are still plenty of reforms and improvements required.

Methods of Reeling.

There are three methods of reeling cocoons at present in operation in Japan, hand-reeling being the most ancient, foot-reeling and machine reeling; the last-named was introduced from Italy and France about fifty years ago. The hand-reeling can be divided into two classes, one "Te-Guri" being the most primitive method which exists now, used in remote districts, and the other "Za-Guri," being a more advanced method now in use in some parts of Japan. Although we do not intend to describe in detail

these reeling methods, in order to make it possible to understand the development of the industry, we will make a short study of the three methods.

(a) In the "Te-Guri" there is a reel which is revolved by means of a rod manipulated by the right hand of the reeler. One pan is used for both the boiling and reeling of cocoons. The index finger and middle finger of the left hand serve for twisting the silk threads, but the reeler by this method has to stop the work as soon as the filaments are broken, because he can only reel one thread at a time. The raw silk produced by this method is coarse, and does not have a uniform denier.

(b) With the method of "Za-Guri" the reeler with his left hand turns the reel by a handle which is fixed to a large wheel, and uses his right hand to adjust the filaments, so as to maintain the even denier of the raw silk. This instrument is better than that of (a), and is still used in many parts of Japan as an important instrument of house industry.

(c) The foot-reeling instrument is that in which the reeling machine (d) and the "Za-Guri" are combined and worked by the use of treadle. It consists of a reeling table and a reeling holder, which are connected, and several utensils for reeling silk. By using this instrument both hands of the worker are at full liberty to throw up the cocoon filaments, which is not possible with methods (a) and (b). By this method more silk is produced than by the methods of the above two and the quality is better, but it is far inferior to the varieties produced by (d).

(d) The machine reeling method is quite different from the above three. There are two pans prepared, one for the boiling of the cocoons and the other for the reeling, and the reels are revolved mechanically. By this method a superior grade of raw silk can be produced, as the cocoon filaments are well united by complete twisting; both hands of the reeler can be devoted to the throwing of filaments, and so it is possible to maintain a uniform denier.

The power used is of different kinds—human labour, water, steam and electricity. The first two are used only in rare cases, and are gradually disappearing. At the

present time most filature works use steam power; electric power will, however, become more general in future owing to its cheapness.

Before Western reeling machines were introduced into Japan silk reeling had been performed by means of the simple hand wheels under the family system, and there was no division between cocoon producers and silk reelers. The reeler sold his raw silk, reeled from the cocoons which he himself had produced. In fact, in these times silk reeling was the most suitable and profitable work as a subsidiary industry for the farmers, as they could be engaged in cocoon feeding and reeling the raw silk between harvest and seed time. Therefore, the men concerned in agriculture and silk reeling in those days were generally farmers. This system of production continued right up to the Japanese-Chinese War, 1894. In the meantime the production of raw silk had rapidly increased, owing not only to the increase of home consumption, but to the great demand from foreign countries. If we compare the production of raw silk in 1868, about which time intercourse with the Western countries began, with that of 1893, when it reached roughly 1,234,000 kan, we can easily observe the rapid development of the industry. If the Coinage Act of 1885 had been passed earlier, then the industry might have been developed much earlier and on a greater scale, as this Act offered great facilities for the foreign trade of Japan. The following table shows the great increase of raw silk exports during the twenty-five years dating from 1868 to 1893.

PRODUCTION AND EXPORT OF RAW SILK BEFORE THE JAPANESE-CHINESE WAR

Years.	Production (Kan).	Export.	
		Quantities (Kin).	Value (Yen).
1868	278,270	1,095,000	6,081,000
1877	—	1,661,000	9,627,000
1883	456,500	2,284,000	16,232,000
1889	966,600	3,103,000	19,278,000
1892	1,096,000	5,407,000	36,270,000
1893	1,234,000	3,712,000	28,167,000

NOTE.—(Kan=8.28 lbs. Kin =1.3228 lbs.)

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It must be remembered that of the total production in 1893, about 78,976 kan, or 64 per cent, was reeled by hand and the other 36 per cent by machines. But by the end of the year the tendency to introduce reeling machines was already noticeable, and more than 2,600 factories were equipped with machines.

MACHINE REELING AND HAND-REELING IN 1893

	Machine Reeling Factories.	Hand Reeling Factories.	Total.
Factories employing more than 500 men	3	3	6
Factories employing between 500 and 100 men	121	17	138
Factories employing between 100 and 50 men	349	39	388
Factories employing between 50 and 10 men	2,129	542	2,671
Total	2,602	601	3,203

The Change from Hand to Machine Reeling.

As stated above, the tendency to develop machine reeling in preference to hand reeling had already started before the Japanese-Chinese War, but its progress was especially noticed after the war. War has far-reaching effects on national economy; the Japanese-Chinese War, which was one of the most important events in the history of Japan, was no exception to the rule. The cost of producing silk rose, but the more efficient machine reeling suffered less than hand-reeling from this increase in costs; in other words, it meant that factory work showed more profits than the small scale family work. Western reeling machines replaced hand-reelers, in order to meet the increased demand for silk and to secure more economical production.

According to the following table, machine reeling showed a 40 per cent increase in cost of production during the eight years ending 1900, while hand-reeling showed 57 per cent increase during the same period.

INCREASE IN COST OF PRODUCTION OF RAW SILK (Per 100 kan)

	1893. (Yen).	1895. (Yen).	1900. (Yen).	Increase in 1900 over 1893. (Yen).	Percentage Increase.
Machine reeling	111	126	156	45	40
Hand-reeling	82	106	129	47	57
Average	96	116	143	46	49

(This table relates to all factories employing more than ten persons.)

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Machine working in factories increased correspondingly, and the total number of kamas¹ was recorded as 183,255 in 1911, although factories seem to have been decreasing in number. This goes to show that the industry was on a greater scale than before the war.

NUMBER OF FACTORIES AND KAMAS IN OPERATION

Years.	Factories.	Kamas.
1893 . . .	2,602	85,988
1896 . . .	2,283	130,753
1900 . . .	2,073	122,166
1905 . . .	2,320	128,152
1908 . . .	2,381	153,771
1911 . . .	2,491	183,255
1913 . . .	2,529	—

(This table includes factories operating more than ten kamas.)

FACTORIES ACCORDING TO NUMBER OF KAMAS

Years.	10-50 Kamas.	50-100 Kamas.	101-500 Kamas.	Over 501 Kamas.
1893	2,129	349	121	3
1896	1,480	509	273	21
1900	1,269	523	262	18
1905	1,423	586	304	7
1908	1,339	631	408	15
1911	1,422	615	423	20
1913		1,983	546	

Thus the tendency to adopt reeling machines brought an increase of the total production: the yearly average increase in 1889 and the following four years was 452,000 kan, while the period from 1899 and the following four years showed 1,038,600 kan. In the first period the volume of production by hand was greater than that by machines; in the last period the proportions were about reversed, as shown in the following table:

Years.	Average Production by Machine, (Kan.)	Average Production by Hand, (Kan.)	Percentage.	
			Machine.	Hand.
1889-1893	452,013	587,479	43	57
894-1898	814,634	657,390	55	45
899-1903	1,038,568	739,501	58	42

¹ Kama is similar to a basin in which cocoons are boiled.

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A rapid increase and development of machine reeling was especially noticed during and after the Great European War. Amongst changes in this industry the most outstanding points were (1) expansion of factories, (2) considerable increase of production and (3) greater efficiency of work and workmen.

Owing to the demand from home and foreign markets during and after the War, there were increased investments of capital, larger undertakings were established, and methods of management were improved both in hand- and machine reeling. During this period, however, the number of factories where hand work was mainly performed decreased from 284,869 in 1913 to 190,785 in 1920, making a decrease of 94,084. It must be remembered, however, that this decrease was in the small factories which were working with less than 10 kamas, as those working with more than 10 kamas increased in number to 600.

In machine reeling there was a more significant change both in the number of small factories (less than 10 kamas) and the larger (more than 100 kamas). The former decreased by 527, or 25 per cent, from 1913 to 1920, and the latter increased by 290, or 53 per cent, during the same period.

NUMBER OF SILK REELING FACTORIES

Years.	Machine Reeling Factories.				Hand Reeling Factories.			
	Under 10 Kamas.	10-100 Kamas.	Over 100 Kamas.	Total.	Under 10 Kamas.	10-100 Kamas.	Over 100 Kamas.	Total.
1913	2,172	1,983	546	4,701	283,617	1,243	9	284,869
1914	1,857	1,900	567	4,324	255,302	792	11	256,105
1915	1,911	1,823	565	4,309	246,446	981	18	247,445
1916	1,588	1,985	621	4,194	238,383	917	4	239,304
1917	1,568	2,094	747	4,409	219,394	1,358	3	220,755
1918	1,781	2,069	789	4,639	205,394	854	9	206,267
1919	1,477	2,017	817	4,311	189,851	1,192	25	190,668
1920	1,645	1,990	836	4,471	188,894	1,886	5	190,785

Thus the decrease in the total number of factories was due mainly to that of the smaller reeling factories. Moreover, it is notable that the total number of kamas in hand reeling, as shown in the following table, decreased by 83,700 during the six years following 1915, in spite of the

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increase of 40 per cent, or 80,000, in the number of machines during the same period.

TOTAL NUMBER OF KAMAS

Years.	Kamas in Machine Reeling.	Kamas in Hand Reeling.	Total.
1915	205,588	333,697	539,285
1916	224,569	328,384	552,953
1917	262,864	300,708	562,572
1918	275,760	281,977	537,737
1919	277,427	257,879	535,306
1920	285,147	249,974	535,121

In regard to the production of silk we can hardly overlook the considerable increase of output from 3,487,000 kan in 1913 to 5,390,000 kan in 1920, which was due entirely to the increasing output of the machines, as the output by hand in the same period decreased by 115,000 kan, as shown in the following table :

OUTPUT OF RAW SILK

Years.	Machine.		Hand.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	1,000 Kan.	1,000 Yen.	1,000 Kan.	1,000 Yen.	1,000 Kan.	1,000 Yen.
1912	2,851	161,501	636	31,373	3,487	192,874
1914	2,892	143,810	618	26,325	3,510	170,135
1915	3,182	176,131	575	27,427	3,757	203,558
1916	3,539	261,891	636	40,167	4,175	257,058
1917	4,279	345,739	606	44,092	4,885	389,831
1918	4,738	449,876	590	50,724	5,328	500,600
1919	5,168	790,135	563	80,170	5,731	870,305
1920	4,869	504,229	521	40,604	5,390	544,833

Thirdly, from the point of view of efficiency, it is particularly noticeable that a rapid technical improvement has been made since 1914 in respect of management as well as workmen's ability. The result of efficiency is that the volume of output increased rapidly, despite the decrease in the number of kamas and in working hours. This undoubtedly was caused by the increased production per kama and the greater skill of the workers.

Again, according to the last two tables the total decrease of kamas in work was 4,164, or 7 per cent, comparing the number in 1915 with that in 1920; the increase in total output, on the contrary, in the latter year was 1,906,000 kan, an increase of 37 per cent on the output in 1915. If we again make a comparison, regarding the improvement of the industry, taking both machine and hand-reeling, it is most interesting to observe that factory efficiency in machine reeling was considerably more marked than in hand-reeling, as is shown in the following table:

PERCENTAGE CHANGE IN 1920 COMPARED WITH 1915

	Number of Kamas.		Output.
Machine reeling	(+) 28		(+) 60
Hand-reeling	(-) 37		(+) 30
Total	(-) 9		(+) 45
	(+) Increase.		(-) Decrease.

Thus, the output in the case of machines was 60 per cent greater in 1920 than in 1915, in spite of the fact that kamas increased in number only by 28 per cent. At the same time hand-reeling showed a decrease of 37 per cent in its number of kamas, but its output increased by 30 per cent.

Output per kama in machine reeling, which had been only 6.16 kan in 1893, rose to 15.33 kan in 1915, and reached 17.08 kan in 1920, which was almost treble that of 1893. In hand-reeling it increased from 1.72 kan in 1915 to 2.10 kan in 1920. The total increase in 1920 over 1915 was 1.07 kan per kama.

OUTPUT PER KAMA

Years.	Machine Reeling. (Kan.)	Hand Reeling. (Kan.)	Total. (Kan.)
1893	6.16	—	—
1915	15.33	1.72	8.52
1920	17.08	2.10	9.59

Causes of the Development of the Japanese Raw Silk Industry.

Having dealt statistically with the development of this industry in Japan, we have now to consider the causes of this development. The progress of the industry was due

to: (1) the development of sericulture; (2) improvement of methods of reeling; (3) progress of industrial management; (4) increased home consumption and foreign demand.

1. The development of sericulture is, needless to say, the most important cause of the growth of the silk industry. As in all industries, cheap and abundant supplies of raw material of fine quality are most essential for the silk industry. So far the reeling industry in Japan has been very flourishing, as sericulture is, as mentioned above, one of the oldest enterprises in Japan, and, incidentally, one of the best suited to the Japanese climate and people. It is, therefore, quite natural that the more sericulture improves the more the reeling industry develops, and it is necessary to observe the development of sericulture in order to study the causes of the progress of the reeling industry.

In the first place, we will take the output of cocoons which reached 7,222,000 koku in 1920, which was an increase of 2,700,000 koku on pre-war figures, and about four times as much as the output before the Japanese-Chinese War. Although the output has been lowered since 1921, owing to the depression after the Great War, the output of 1923 still kept its high record of 6,953,000 koku.

OUTPUT OF COCOONS

Years.	Output (Koku).
1892	1,481,000
1893	1,687,000
1894-1898 (Average)	2,007,000
1899-1908 "	2,586,000
1909-1912 "	3,101,000
1913	4,162,000
1914	4,592,000
1915	4,412,000
1916	4,647,000
1917	5,708,000
1918	6,370,000
1919	6,832,000
1920	7,222,000
1921	6,332,000
1922	6,056,000
1923	6,953,000

(Koku=4.9629 bushels.)

It is noteworthy that, in spite of a large increase of cocoon output, as shown above, the percentage increase did not exceed that of the raw silk output, comparing pre-war with post-war figures.

Increase of cocoon output, 1913-1920, 38 per cent.

Increase of raw silk output, 1913-1920, 55 per cent.

This increased yield of silk per cocoon is mainly the result of the better feeding of silk worms, which produces undoubtedly superior quality cocoons, which means also that the reeler can reel more raw silk out of each cocoon than he could before. For instance, before the War it was usual for 1 kan of cocoons to produce 100 monme (1 monme is 0.1325 ounces) of raw silk, but to-day it has been raised to 113-114 monme out of the same amount of cocoons, an increase of 13-14 per cent.

It can easily be seen then that the improvement of sericulture, both in the quantity and the quality of the output, has caused the increase in the efficiency of reeling during this period.

2. Improvement of Methods of Reeling.—At the beginning of the industry the product was limited to rough, uneven and unfinished silk. Even after the introduction of reeling machines, the products could not be compared with the finer and superior French and Italian goods. This was due not only to the difficulty of obtaining good cocoons owing to the infancy of sericulture, but also to the primitive state of the methods of reeling. However, after the Japanese-Russian War (1904-1905) the industry made good progress, and its methods of reeling are no longer considered inferior to those employed in France and Italy.

3. Progress of Industrial Management.—Together with the improvement in methods of production, factories went on improving in methods of management. The modern reeling machines under the factory system induced great changes in organization, such as the reduction of working hours and the establishment of recreation and other facilities for workmen. As a result of this, the quality of raw silk has become vastly improved, the industrial efficiency and

productive power of factories have increased, and the cost of production has been lowered and wages raised.

4. Increased Home Consumption and Demand from Foreign Markets.—Although silk is one of the chief products of Japan and the industry the most widespread in the country, silk is regarded as an expensive article for the middle and working classes, who look upon it as being too luxurious for ordinary use and only fit for special occasions. In accordance, however, with the increase of wealth and higher standard of living, silk goods have been in great demand by all classes in recent years, and as a consequence the figures for home consumption of raw silk rose to 11,878,000 kin in 1918, although in 1919 they decreased to 7,053,000 kin, owing to the economic depression after the European War; this was, however, 2,059,000 kin greater than in 1909, when the consumption was 4,994,000 kin.

HOME CONSUMPTION OF RAW SILK

Years.	Quantity (Kin).
1909	4,994,000
1913	3,153,000
1914	6,326,000
1917	7,406,000
1918	11,878,000
1919	7,053,000

As to the export of raw silk, which has been referred to as one of the causes of the industry's progress, the demand for Japanese raw silk in foreign markets has caused that industry to prosper and production to increase. Before the Japanese-Chinese War the export was only 6,886,900 kin; but it has increased rapidly since, reaching 13,487,000 kin in 1900, and then jumping to 20,228,600 kin in 1913. The most significant figures were those during and after the Great War, as shown on page 98.

It is an interesting fact, which we must not overlook, that the production of raw silk in the main silk-producing countries, such as France and Italy, has, on the contrary, shown a distinct downward tendency during recent years.

EXPORT OF RAW SILK

Years.	Quantity (Kin).	Years.	Quantity (Kin).
1899	6,886,900	1913	20,228,600
1900	8,531,000	1915	17,814,000
1901	13,487,000	1916	21,742,000
1902	13,271,000	1917	25,829,000
1903	12,756,200	1918	24,344,400
1907	8,684,400	1919	28,622,400
1908	11,521,800	1920	17,118,700
1909	13,469,400	1921	26,202,800
1910	14,846,200	1922	34,419,200
1911	14,456,000	1923	26,328,800
1912	17,102,600		

PRODUCTION OF RAW SILK

Italy.		France.	
Years.	Quantity (Kin).	Years.	Quantity (Kin).
1893	10,625,000	1893	2,272,000
1903	9,403,000	1903	1,164,100
1913	9,441,100	1913	833,400
1914	10,848,000	1914	1,080,100
1915	7,681,000	1915	336,700
1916	9,633,200	1916	320,000
1917	7,522,900	1917	546,700
1918	6,187,500	1918	653,400
1919	4,892,000	1919	480,000

The fact that the world's increasing demand for silk has been met, in spite of the low production of these countries, can only be explained by the fact of the great progress of the Japanese reeling industry, which has grown to such an extent as to be able to meet the greater part of the increased demand of the world's market. To illustrate the point we will cite the total figures of the world's silk consumption and production, excluding Japan. The following table shows that the world's consumption of silk (excluding Japan) increased by 8,340,000 kin, or 23 per cent, from 1910 to 1919. On the other hand, the world's production (excluding Japan) decreased by 9,114,000 kin, or 35 per cent, during the same period. As a consequence, the excess of demand over production was 27,980,000 kin in 1919 against 10,530,000 kin in 1910. This difference, most of which was

supplied by Japanese raw silk, has undoubtedly been the main cause of progress in the Japanese silk industry, which is now in a foremost position as a supplier, as it provided 18 per cent of the world's total supply in 1895 and 56 per cent in 1919.

WORLD PRODUCTION AND CONSUMPTION OF RAW SILK
(excluding Japan)

Years.	Production (Kin).	Consumption (Kin).	Deficit (Kin).
1910 . .	25,986,000	36,516,000	10,530,000
1913 . .	25,542,000	39,727,000	14,185,000
1919 . .	16,872,000	44,856,000	27,984,000

Inferiority of the Japanese Raw Silk Industry.

As mentioned above, Japan seems to have gained the position of being able to supply the largest amount of raw silk in the world. Judging from the present state of the industry, however, it cannot be regarded as having reached the fully developed stage of its progress, as there are still many defects in its organization and management which greatly need remedying.

1. Speculative Fluctuation of Prices.

The lack of a steady and safe market for silk is the chief defect in this industry. Owing to the continual and artificial fluctuation of prices the industry has more or less been run on speculative lines. This has undoubtedly been the main check to steady progress. Those engaged in the industry have to be on the look out all the time for opportunities of better dealing. The principal item of cost which has to be considered is the market price of raw silk, which has an undesirable tendency to fluctuate largely because of artificial influences and not through changes in supply or demand. Those in the industry are inclined to pay the whole of their attention to a mere chance of price fluctuation for the purpose of gaining better business. Therefore, the people concerned naturally neglect the more important sides of the industry, such as the improvement of management, of industrial organization, and of methods of production and necessary

scientific investigations. If attention was paid to these things it would go far to help reduce the cost of production and to raise the efficiency of factories.

It is necessary to know how and when the industry became of such a speculative nature. It will be noted that the industry became speculative from the very time the Tokugawa Shogunate opened the ports to foreign countries and silk became one of the important goods for export. From the commencement, the United States of America has been Japan's largest customer for silk, and it is only natural that prices should fluctuate owing to the exchange movements between the two countries. The industry, however, was so vast and unstable that no business man could rely on being able to deal in a steady market. Price fluctuations were due also to the unhealthy state of Japanese finance and the coinage system at that time, and, further, to the unsatisfactory system of silk dealing in Japan, which was made worse by the activities of a few speculators. After the Coinage Act of 1885 was brought into force, though foreign exchange fluctuated less than before, price fluctuations in the industry still continued. The old speculative conditions which had been doing a great deal of harm to the industry could not be got rid of all at once, and still remained as an obstacle to the establishment of large-scale silk reeling factories, as the industry was not a safe field for big investment so long as such vast fluctuations continued. Curious as it may seem, the industry was in those days in the hands of many small men who appeared to be persons mostly unable financially to face such dangerous fluctuations of prices. In time, however, this state of affairs gradually improved and the modern capitalistic establishments were opened up, but fluctuations never ceased and speculative conditions still continued. The reasons for continued instability are as follows :

- (a) The misconception still existing in the minds of many people that the silk business is a mere speculative transaction.
- (b) The unsatisfactory methods of marketing cocoons.

- (c) The ignorance of raw silk producers in regard to the demand for silk.
- (d) The lack of elasticity in the demand for silk.

Unless these causes can be done away with the silk business in Japan cannot be anything but speculative. Following are a few instances of price fluctuations. In 1906 and the following year, or just after the Japanese-Russian War, a huge rise and fall of prices was experienced: they rose 35 per cent in the former year and dropped suddenly by the same percentage in the following year. It is needless to add that many firms and people concerned were seriously affected by this tremendous fluctuation in such a short period. Furthermore, the fluctuation in prices in 1919 and 1920 was considered to be the most remarkable ever recorded. These years were, of course, a transitional stage from the post-war boom to the slump. During 1919 prices still kept rising to such an extent that between the highest and the lowest there was a difference of 60 per cent. However, this rising tendency was suddenly checked by the world-wide depression after the Great War, and the price at the end of 1920 was nearly 75 per cent lower than the highest price at the beginning of the year. Owing to this heavy fall in prices hundreds of firms in the industry found themselves in terrible difficulties, being on the verge of bankruptcy and unable to carry on without help. At this critical moment a firm, called Teikoku Sanshi Kabushiki Kaisha (The Imperial Silk Co., Ltd.), was established especially for the purpose of remedying the disturbed state of the industry on the condition that the Government would help them financially, if necessary, to the amount of yen 50,000,000. Thus the critical time of 1920-1921 passed without inflicting the damage to the silk industry that was expected.

The following table shows the price fluctuations of silk as recorded on the Yokohama Silk Exchange for the past twenty years, and the following chart gives a rough idea in regard to the high fluctuations of raw silk in comparison with other commodities:

FLUCTUATION OF SILK PRICES
(per 100-kin machine-made fine silk)

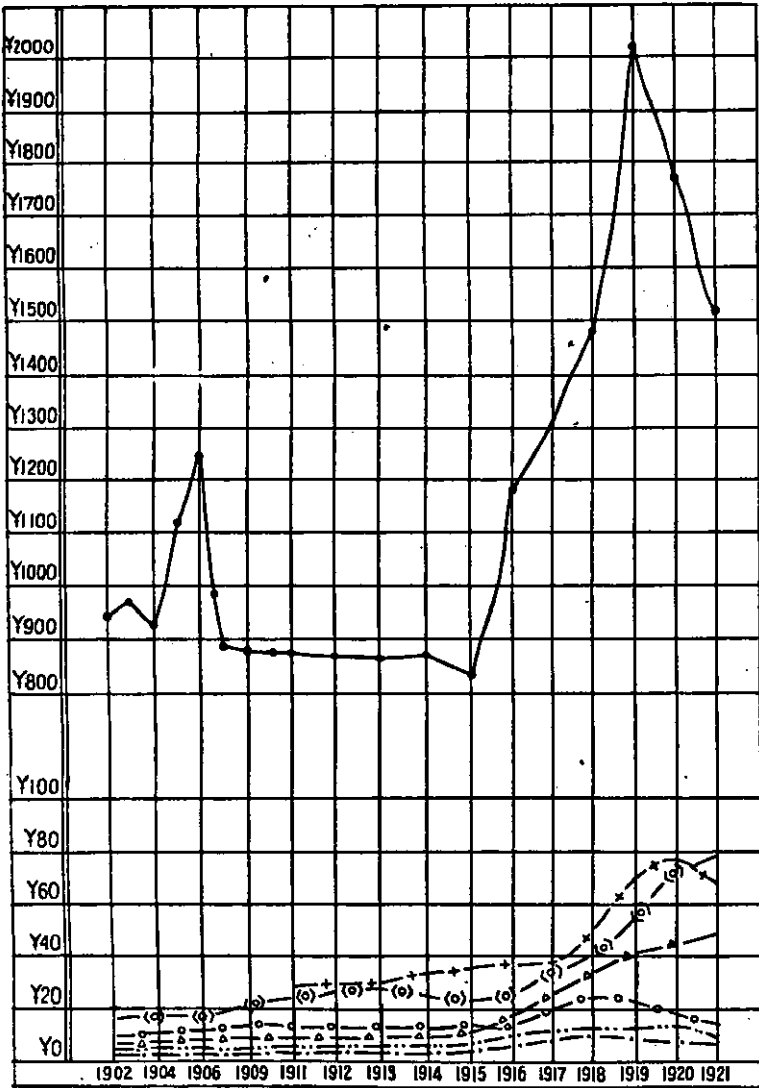
Years.	Highest (Yen).	Lowest (Yen).	Average (Yen).	Difference between Highest and Lowest.
1902 . . .	1,000	850	946.30	150
1903 . . .	1,050	850	997.50	200
1904 . . .	1,010	850	905.00	160
1905 . . .	1,075	910	966.90	165
1906 . . .	1,450	945	1,048.00	505
1907 . . .	1,430	930	1,231.00	500
1908 . . .	975	820	895.00	155
1909 . . .	935	810	877.40	125
1910 . . .	990	820	858.90	170
1911 . . .	980	810	858.90	170
1912 . . .	925	820	847.00	105
1913 . . .	1,025	840	859.40	185
1914 . . .	1,030	700	883.80	330
1915 . . .	1,150	735	830.10	415
1916 . . .	1,350	1,030	1,170.60	320
1917 . . .	1,750	1,125	1,302.90	625
1918 . . .	1,620	1,300	1,477.80	320
1919 . . .	3,280	1,300	2,006.90	1,980
1920 . . .	4,360	1,100	1,663.00	3,260
1921 . . .	2,020	1,390	1,511.00	630

In conclusion, it may be observed that nearly all small firms, and even some of the oldest established ones were at times threatened with complete collapse, owing to the vast fluctuation of prices such as occurred in 1906-1907 and 1920-1921. Therefore, the fact that the present state of industry is so unstable, owing to the actions of certain speculators, is not only harmful for non-speculative firms, but also undesirable from the point of view of national economy, towards which the prosperity of the silk industry contributes a great deal. The unsettled movement of prices affects instantly the Japanese foreign silk market, checking the export of silk and manufactured goods.

2. Lack of Efficiency and Skill.

The next thing to be mentioned is the inefficiency of factories and the lack of technically skilled workmen. As already described, the industry has been considerably

FLUCTUATION OF PRICES OF COMMODITIES



(From "Résumé Statistique de L'Empire du Japon")
page 170

RICE	(per hectolitre)	—○—	SILK	(per 100 kin)	—
WHEAT	{ - - - }	—●—	SUGAR	{ - 100 kilogramme }	—+—
SOYA BEAN	{ - - - }	—△—	JAPANESE WINE	{ - hectolitre }	—(o)—
JAPANESE SAUCE	{ - - - }	—△—			

improved and developed during the last few years, but it is still far from being as efficient and as well equipped as that of France and Italy. For instance, in the most modern Italian reeling factories there are eight reels to each kama, whilst in Japan there are only three reels to each kama, or in some, four. The result is, of course, a great difference in production per kama; this greater production is due also to Italian cocoons being superior to Japanese, and to the lack of skill of Japanese workmen. It will also be noticed that the application of machinery has not been widespread in connection with the boiling of cocoons, reeling and other necessary processes which are now being performed by France and Italy. Therefore, in those countries even fresh hands are able to learn quite easily how to reel silk in the course of not more than three months. It is quite obvious that lack of efficiency and skill will prove a strong obstacle in the way of development and progress, and will be the cause of a rather higher cost of production. As a consequence, it is absolutely necessary that the modern elaborate machines should be introduced and also that workmen should be trained.

3. Defects in Industrial Organization.

As many matters come under this heading it will be possible to point out only the more significant defects of organization. They are (a) the existence of so many small factories and (b) the inefficient methods of marketing cocoons.

In regard to (a), although we have seen in the above sections there is a tendency for small establishment on the family system to disappear, and for small factories to be replaced by larger ones, there is still plenty of room for industrializing the industry according to modern practices. In other words, it should be developed by the investment of capital on a larger scale, so that the size of factories may be increased.

According to the figures at the end of 1920, there were 195,256 factories altogether, including individual family establishments, which were carrying on silk reeling as a

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mere subsidiary business. Dividing the total number of kamas in use by the number of factories, we find that each factory had only 2.44 kamas on an average. Excluding small family concerns from large-scale factories, which are principally equipped with modern machinery, each factory had 63.8 kamas on an average; 60 per cent out of the total number of kamas were used by them. It must be remembered, however, that the factories which come under the category of factory have to be divided into three, viz. those having less than 10 kamas, which comprised 37 per cent of the whole, those having more than 100 kamas, which comprised only 14 per cent, and the remaining 55 per cent having 10 to 100 kamas. Therefore, the industry is not fully developed from the point of view of the size of factories.

NUMBER OF KAMAS PER FACTORY

Years.	Average (All Factories.)	Average (Large Factories.)
1915 . . .	2.14	47.7
1916 . . .	2.37	53.5
1917 . . .	2.15	59.6
1918 . . .	2.22	59.4
1919 . . .	2.42	64.4
1920 . . .	2.44	63.8

If modern industrial organization requires the setting up of Limited Companies, it will be seen from the following table that the Japanese reeling industry is far from being modern, for the proportion of Limited Companies is small :

DIVISION OF CAPITAL ACCORDING TO THE FORM OF ESTABLISHMENT IN THE SILK INDUSTRY

Capital invested in the form of :	Per-centage.
Producers' Co-operative Societies	15
Limited Companies	10
Limited Partnerships	15
Co-operative Societies producing silk and other things	30
Private individual factories	30
Total	100

As shown on page 104, the capital invested in Limited Companies is only 10 per cent of the whole. The industry will not be efficiently organized until more capital is invested in Limited Companies. As Limited Companies are able to hold out longer than private companies against unsettled and weak market conditions, it makes it more likely that they would be able to make a stand against a big fluctuation of prices ; and in the event of such a fluctuation they would not be forced to sell their stock at unreasonably low prices, owing to their firmer financial standing. Smaller firms are not able to wait long enough for the future revival of the market : as soon as prices fall they are obliged to dispose of their stock ; at present this usually happens, and the market is soon overstocked and prices fall. Generally speaking, the majority of businesses lack enough credit to tide themselves over the unfavourable period. Bankers are very wary of rendering financial facilities to them, and they, therefore, have to resort to borrowing money through silk merchants, who charge unreasonably high interest. So long as these circumstances continue we can hardly expect to establish healthy business conditions and a modern form of organization. If the industry could be unified or companies amalgamated, the disadvantages arising from small-scale enterprise would be accordingly reduced. The larger the capital the more financial facilities would be afforded, and the industry would work on a far more satisfactory basis.

With regard to (b), a lengthy description is needed, in order to explain the present situation and possible future reforms.

In the early stages of the industry, sericulturists frequently reeled the silk themselves, so that very little inconvenience was experienced in cocoon marketing. But the more the industry developed, the wider became the gap between the two sides, and dealing in the raw material passed into the hands of middlemen. Purchasers and factories having to pay the middlemen's commission, prices were higher than if the material had been directly supplied by the producers. If a factory now wishes to purchase

cocoons without the middleman they must employ their own cocoon collectors to go about the various districts. Whichever method be adopted, the cocoons cost more than they did in the early stages of the industry before competition for the raw material had developed to its present extent.

Furthermore, a matter to which we must pay attention is that, apart from the middleman, the method by which fresh cocoons are purchased causes great inconvenience and risk to both purchaser and supplier. It is common at present for the supplier to sell fresh cocoons as quickly as possible, owing to the lack of drying equipment, and the purchaser also wishes to buy the cocoons in large quantities, owing to other keen competitors. As a consequence a proper estimate of the real weight of cocoons (i.e. their weight when dry) cannot be taken. Further, owing to such large stocks being purchased, in the event of a big fluctuation of price coming after a transaction one or the other is bound to suffer a loss. If the supplier be fortunate enough to sell raw material just before a drop of prices, the purchaser will incur loss through his miscalculation, and so there will always be unrest.

There are many ways of improving present conditions, one of them being to bring both sides closer together, and let them transact business direct without the middleman's intervention, and to make long-term contracts at fixed prices and arrange for the allotment of profits realized by unforeseen fluctuation of price.

In order to fix a price, it will be necessary to calculate the average price a few years hence, the standard price at the moment of transaction and future prospects. Should the market price rise above the fixed price, the profit thus gained by factories through early buying must be divided according to agreement between the two. If this method be practical the present unrest caused by fluctuation will be greatly reduced. This method, however, may not be so easy to realize in some districts on account of the different interests of the seller and purchaser. Another method is the establishment of public cocoon markets in various

centres of the silk industry, from which the following advantages would arise :

1. Purchasers would be able to buy any amount of cocoons to suit their requirements without despatching their cocoon collectors to various places and thereby save much expense.
2. Producers could at same time sell cocoons easily and satisfactorily at a reasonable price without risking fluctuation of prices.
3. By these means the two could make their transactions without the middleman and the collector.
4. Less fluctuation of cocoon prices and less risk to the business would be expected, as the people concerned would be closer connected and more familiar with the tendency of business.

There is another important thing to be done, and that is; that the present system of buying and selling cocoons when they are fresh must be stopped. At the present time producers have to sell fresh cocoons in order to get quick returns, owing to lack of financial resources, and also because of the lack of establishments for drying cocoons. At the same time purchasers buy fresh cocoons in spite of having no storing house for them. In such cases the producer sells them at too low a price, and the purchaser has to face the risk of keeping them in a fresh state. In order to avoid such inconveniences and risks, dealings in dry cocoons should be introduced.

It is hardly necessary to add that the utmost care must be taken in drying cocoons. The object of drying is to drive all the moisture from the body of the pupa and to keep the characteristic nature of the cocoons for an unlimited period. After being dried, the cocoons must be carefully attended to to prevent them from becoming wet again and to prevent attacks by rats, mice, insects, bacteria and vegetable mould.

It is more or less impossible for everyone to have a drying

house for these purposes, owing to the expense ; therefore, if each centre of the silk districts erected a drying house together with a store in the market-place, greater conveniences and facilities would be rendered to both producer and purchaser.

It must be remembered that cocoons are more or less moist at all times, as they absorb moisture easily. They must always be dried before being brought into the store ; until they reach the weight which perfectly dried cocoons should weigh, they can hardly be considered as being of the proper weight. The more moist they are, the worse will be the quality of the silk. Therefore, it is most important to classify them according to whether they are properly dried or not. Because of this, the so-called net weight transactions are very important, as this is a method of transacting cocoons by weight according to dryness. If they are more than the net weight, then the surplus is absorbed moisture, which reduces their value accordingly. This kind of transaction has been introduced in Italy and France for the last eighty years, and has proved itself very successful. Should this method be adopted by the Japanese silk industry, together with the establishment of cocoon markets, the risks and inconveniences attending the present state of cocoon marketing will be greatly reduced and the result will be improvement in the industry.

Export of Raw Silk.

Raw silk is the biggest item in Japanese exports and stands before all industrial products as well as exported commodities. Although the value of its export varies yearly on account of the fluctuation of price and economic conditions in foreign markets, the exports have greatly increased in value as well as in quantity. In 1923, the export of raw silk amounted approximately to yen 568,370,000, about 39.2 per cent of the total exports. In 1913 it stood at yen 188,917,000, or 29.9 per cent of the total exports.

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EXPORT VALUE OF RAW SILK

Years.	Value (Yen).	Percentage of the Total Export.
1908 . . .	108,609,052	28·71
1909 . . .	124,243,239	30·08
1910 . . .	130,832,940	28·54
1911 . . .	128,875,094	28·80
1912 . . .	150,321,198	25·53
1913 . . .	188,916,892	29·87
1914 . . .	161,797,411	27·39
1915 . . .	152,030,518	21·45
1916 . . .	267,036,616	23·68
1917 . . .	355,155,034	22·15
1918 . . .	404,983,043	18·87
1919 . . .	623,618,507	29·71
1920 . . .	382,715,196	19·64
1921 . . .	417,123,070	33·19
1922 . . .	671,365,000	41·00
1923 . . .	568,370,000	39·20

Export of raw silk has with a few exceptions amounted to between 20 and 40 per cent of the total exports during the last fourteen years.

The United States of America is the chief customer for it ; over 90 per cent of the total exports go to that country and the balance is distributed between France and England, to which countries exports have decreased markedly during the last few years. The same applies to Italy, to which country exports amounted to more than 10 per cent of the total value of exports before the War. In fact, exports to that country in 1913 stood at 13 per cent.

EXPORTS OF RAW SILK TO THE PRINCIPAL COUNTRIES

Countries.	1919.		1920.		1921.		1922.		1923.	
	Value.	P.C.	Value.	P.C.	Value.	P.C.	Value.	P.C.	Value.	P.C.
U.S.A.	600,841	96·3	341,598	89·2	394,451	94·5	610,844	90·9	442,199	77·7
France	17,156	2·7	37,035	9·7	21,445	5·0	55,191	8·2	7,228	1·2
England	3,326	0·5	3,172	0·8	849	—	2,888	0·4	329	—
India	1	—	428	—	—	—	—	—	—	—
Italy	295	—	59	—	—	—	755	—	—	—
Canada	1,925	0·2	62	—	127	—	137	—	1,548	0·2
Egypt	—	—	23	—	—	—	—	—	—	—
Australia	40	—	268	—	226	—	—	—	463	—
Total (including others)	623,618	100	382,715	100	417,123	100	671,365	100	568,370	100

(Value, yen 1,000. P.C.=Percentage.)

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According to the above table, two countries, America and France, consume the greater portion of the whole amount of exported raw silk ; and it is a most significant thing to note that exports to America have increased remarkably during the last nine years, as they were 66·6 per cent of the total in 1913 and 94·5 per cent in 1921 and 77·7 per cent in 1923. Those to France have gradually decreased from 17 per cent in 1913 to 1·2 per cent in 1923.

EXPORT PERCENTAGE TO AMERICA AND FRANCE

Years.	U.S.A.	France.
1913 . . .	66·6	17·0
1914 . . .	83·3	4·5
1915 . . .	83·8	13·4
1916 . . .	83·9	11·9
1917 . . .	86·2	9·9
1918 . . .	86·0	11·2
1919 . . .	96·3	2·7
1920 . . .	89·2	9·7
1921 . . .	94·5	5·0
1922 . . .	90·9	8·2
1923 . . .	77·7	1·2

Therefore, America is not only the biggest customer of Japan, but the most indispensable country for Japanese raw silk export, and, in fact, for the whole of Japanese exports. Raw silk exports amount to 20-40 per cent of the total value of exports, as mentioned above ; if America buys less silk the raw silk industry will be seriously affected.

What we have to draw attention to in regard to the future of the raw silk export are (a) the appearance of artificial silk and its rapid progress, and (b) the development of the Chinese silk industry, which are both likely to affect the demand for Japanese raw silk in the future.

(a) Artificial silk will undoubtedly be a great menace to the Japanese silk industry. We have heard expressed optimistic opinions that artificial silk is, after all, inferior to natural silk in respect of its fineness, specific gravity, strength and elasticity, and on account of its weakness in water and its being inflammable, and for these reasons silk will not only maintain its present level of production,

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but it will be used on a still larger scale. Artificial silk will be used in limited cases as auxiliary to and not in the place of natural silk. These optimistic ideas have been proved to be wrong, and opposite tendencies have been noticed in many directions. Should the inferiority of artificial silk as compared with the natural be remedied sufficiently, then natural silk will without a doubt be affected by artificial silk, as the price of the latter is far lower than that of the former. According to the following table it is obvious that natural silk is 51.3 per cent dearer than artificial silk when taking the average of prices in New York silk market during the last eight years.

SILK PRICES IN NEW YORK

Years.	Artificial (per lb.).	Natural (per lb.).	Per- centage.
1913 . . .	1.625	3.69	44.0
1914 . . .	1.700	3.66	46.4
1915 . . .	1.858	3.40	54.6
1916 . . .	2.871	4.86	59.1
1917 . . .	3.520	5.64	62.5
1918 . . .	3.917	6.41	61.1
1921 . . .	2.525	6.06	46.3
1922 . . .	2.540	7.00	36.3

The present position is that the more artificial silk is improved the larger will be the demand for it, and its use, which has been practically limited to making piece goods, such as ties, gas mantles, thread and knitted wear, etc., will be widened and it will be used for weaving.

Before the Great War the world's total output of artificial silk was about 12,000,000 lbs. It has, however, made remarkable progress in its output, and also in the number of factories engaged in the industry. It is worth while noticing the expansion of the American artificial silk industry. America's output of artificial silk, which was only 1,500,000 lbs. in 1913, increased rapidly; in 1921 it was fifteen times more, and it is expected to reach a yearly output of 32,000,000 lbs. after the completion of factories now being constructed, which corresponds to 70 per cent of the amount of the present silk consumption of the United States.

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(b) We have to pay great attention to the rise of the Chinese silk industry, which was once larger than that of Japan, and which on the average accounted for more than 39 per cent of the world's total output of raw silk up to 1908, whilst Japan only produced 20 per cent. Since 1909, however, Japan has forged ahead of China and reversed the position. In 1920, Japan produced 55 per cent against China's 26 per cent. The following table shows the progress of raw silk production and exports both in Japan and China during 1905 and 1920.

RAW SILK EXPORTS OF JAPAN AND CHINA

Years.	China.		Japan.	
	Quantity (Picul).	Percentage.	Quantity (Picul).	Percentage.
1905	101,000	100	70,000	100
1906-1910 (average)	120,200	119	116,000	166
1911-1915	127,600	120	173,400	248
1916-1920	115,400	114	236,800	338

RAW SILK IMPORTS INTO THE UNITED STATES

Years.	From China.		From Japan.		Total.	
	Quantity (lbs.).	Percentage of Total Silk Import.	Quantity (lbs.).	Percentage of Total Silk Import.	Quantity (lbs.).	Percentage of Total Silk Import.
1900	2,262,000	25	4,659,000	51	9,140,000	100
1913	6,140,000	22	19,057,000	68	27,979,000	100
1919	9,099,000	25	23,726,000	75	44,817,000	100
1920	5,932,000	20	22,904,000	76	30,058,000	100
1921	9,587,000	31	31,704,000	70	45,355,000	100
1922	8,378,000	16	40,028,000	79	50,711,000	100
1923	12,261,000	24	33,377,000	69	49,505,000	100

The reason why the Chinese silk industry and its exports have been almost at a standstill is mainly the fact that hand- and foot-reeling are still in operation on a great scale and only a few reeling machines have been installed. This is due in the first place to the great opportunity of employing cheap labour; secondly, to the fact that conditions in the Chinese silk industry have not reached a stage which needs machines; and, thirdly, to the lack of capital and unsettled state of the Chinese coinage system, which not only gives no facilities to Chinese business men, but rather drives them to undesirable speculation in the industry, such

as renting factories temporarily when they think the time favourable for the business. These facts are common knowledge in Shanghai and Canton at the present time.

Notwithstanding the present state of the industry, China has a great and promising future should the industry be properly carried on, because in China there are plenty of mulberry trees, the leaves of which are essential for the feeding of silkworms. Chinese cocoons are generally superior in quality to any others, and the raw silk is usually strong and more even. If encouragement is given to sericulture, the improvement of reeling methods is secured, and technical knowledge is gained, her industrial future will be decisively assured. When these things come about then the Chinese silk industry will undoubtedly be a strong competitor to the Japanese silk industry. The Japanese silk industry has gained the position of being the largest supplier of raw silk in the world's market; the French and Italian raw silk industries have been declining gradually since the Japanese industry made such progress. Similarly China may be expected to supersede Japan as the chief silk producer of the world, as China has now greater advantages than Japan. The former has an abundant supply of cheap labour and great possibilities of obtaining plentiful supplies of good quality cocoons, whilst Japan is losing her advantages of recent years, through which she undersold the European raw silk industry, as the wages of labourers and the cost of production have risen considerably. Therefore, it is of great importance to those engaged in the Japanese silk industry to draw up a policy in order to meet future Chinese competition. The tendency appears to be for foreign traders to invest capital in China to produce cheaper Chinese raw silk. The United States of America has already started to establish the industry in China. Thus, not only will China be a great competitor in the future, but we shall also have to cope with the development of the artificial silk industry, which will certainly be a menace to us so long as it continues to grow as at present.

It is perfectly obvious then that the industry in Japan must not delay improvements on the lines of the above

suggestions, in order to lower costs of production and to raise the quality of the product, so that the present position may be maintained or improved.

§ 2. SILK MANUFACTURES

General Development up to 1913.

It is unnecessary to repeat the details regarding the development of the silk manufacturing industry, as the industry was introduced together with silk reeling and underwent the same process of development. In short, silk manufacturing was introduced from China some 1640 years ago, and by the aid and encouragement of the then Emperor O-Jin it was established as an industry, although only in a primitive way, for domestic uses. It may be said that, excepting China, Japan is the oldest silk-producing country. In Europe the commencement of the industry in the principal countries with the exception of Greece was far later than in Japan. In both France and Italy it had its origin not earlier than the 13th century, and in England it began at the end of the 15th.

However, in spite of the fact that Japan is practically the oldest established country for silk, the industry had not made great development, and up to the Meiji Restoration it had been more or less at a standstill, while other countries had been making rapid progress. But once a wider market was found in foreign countries some fifty years ago the Japanese silk industry made striking progress, especially in producing habutæ and silk handkerchiefs, which were the first manufactured goods demanded by foreigners. These were mainly exported to America in huge quantities, because they were suited to the people's taste. The first place engaged in this line of industry for the purpose of export was a town called Kiryu in Joshu. Fukui, Kanazawa, Toyama and Kawamata then took to producing for export. They are at the moment the principal towns of the silk manufacturing industry.

Since 1884 the industry has made rapid progress, and the total value of silk products of 1893, just before the

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Japanese-Chinese War, reached yen 23,700,000, being an increase of 130 per cent as compared with the average amount of the five years ending 1890. The reason for the increase was the rapid increase of silk exports, which corresponded to one-third of the whole value of products, instead of being one-fifth of them as in the latter period. In those days the most important items of exported silk goods were *habutæ* and handkerchiefs, as shown in the following table :

EXPORTS OF SILK GOODS IN 1893

	Yen.	Per Cent.
Habutæ	3,554,000	42
Handkerchiefs	3,900,000	46
Others	1,047,000	12
Total	8,501,000	100

After the war with China the industry made again great progress, availing itself of the post-war boom. The total value of output in 1898 increased by 260 per cent as compared with the output before the war, 1893. Although the increase was partly due to the advanced price of silk goods, the actual quantity of output also increased more than twice. It is interesting to note that the rapid increase of the post-war time showed a greater home demand than a foreign demand. Therefore, the export value compared with the total value of output decreased from 40 per cent in 1894 to 22 per cent in 1897, although it increased a little in 1898.

OUTPUT OF SILK GOODS AND EXPORTS
(yen 1,000)

Years.	Output.	Per Cent.	Exports.	Per Cent.	Percentage of Exports to Output.
1886-90 (average)	10,524	100	2,142	100	20
1891	15,125	144	4,790	224	31
1892	19,348	184	8,277	385	42
1893	23,775	226	8,501	705	36
1894	32,539	309	13,043	609	40
1895	46,361	441	15,338	716	35
1896	54,019	513	12,034	562	22
1897	62,663	596	13,936	651	22
1898	84,147	800	30,894	975	29

(Outputs are the figures for silk piece goods and cloth for Japanese *obi*—belt.)

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The period between 1899 and 1913 may, generally speaking, be described as a time of inactivity in the industry, although there was an ebb and flow of business before and after the Japanese-Russian War (1904-1905). Reacting from the financial depression of 1898, the industry languished owing to the slump in both the home and foreign demand. Its output in 1900 and onwards decreased gradually in spite of the rise of prices, and it reached its lowest figure in 1903. Although the tendency of an increasing output gradually came about after 1904, it was only a 20 per cent increase in 1913 as compared with the increase of fifteen years before.

VALUE OF OUTPUTS OF SILK GOODS (Yen 1,000)

Years.	Piece Goods.	Cloth for Obi.	Others.	Total.
1898	73,932	10,215	20,894	105,041
1900	65,092	9,484	22,922	97,501
1901	62,109	7,953	29,579	99,641
1902	54,922	6,882	31,032	91,936
1903	32,225	4,485	31,873	68,583
1904	43,020	2,484	43,723	89,225
1905	53,506	3,018	35,384	91,908
1906	70,582	9,611	41,691	116,890
1907	73,022	3,862	37,152	114,036
1908	79,172	4,756	34,429	118,357
1913	69,605	8,100	42,625	120,326

On the other hand, the exports of silk goods, such as *habutæ* and silk handkerchiefs, figured at about yen 20,100,000 in 1898. However, they did not show much increase during the following two years, owing to the increase from 45 per cent to 60 per cent of duties on foreign textile goods, which the United States imposed in 1898. Soon after America's new custom duties came into force, she made an agreement with France by which the former exported agricultural products to France and imported French silk manufactured goods at special reduced rate. The result was that Japanese *habutæ* was in great demand from France, and at the same time the Japanese silk met a new demand in India

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and other foreign markets. In consequence, exports gradually increased again after 1901, and reached their highest figure of yen 49,300,000 in 1906. From 1907 to 1913 foreign demand assumed again a downward tendency, decreasing to yen 29,364,000 in 1913. The main cause of the decrease was that the import duties on silk goods in America and France were again raised.

EXPORTS OF SILK GOODS BEFORE THE GREAT WAR (Yen 1,000)

Years.	Habutæ.	Silk			Total.
		Handkerchiefs.	Others.		
1898	12,056	3,555	5,283	20,894	
1899	15,799	3,462	1,452	20,713	
1900	17,436	4,319	1,141	23,396	
1901	23,912	3,951	1,696	29,559	
1903	27,510	2,938	1,425	31,873	
1905	28,058	8,980	7,326	44,364	
1907	29,249	8,685	7,903	45,837	
1909	25,797	3,816	3,126	32,739	
1913	21,337	5,001	3,026	29,364	

The Silk Manufactures after the War.

The long depression in the silk manufacturing industry in Japan disappeared as soon as the European War broke out, owing not only to the great increase of home consumption and the growth of foreign demand, but also to the rapid rise of prices of silk goods. In 1913 the value of the exports of silk manufactures was yen 29,364,000; in 1920 it increased to yen 167,101,000, this increase being caused by the rise in prices and also by the increased quantity of exports. It must not be overlooked that the increase in exports represents a net increase of 469 per cent, whereas the increase in the total output is only 289 per cent, or, stating their relative increase, exports were 25 per cent of total output in 1913, while in 1920 they were 36 per cent. We can, therefore, conclude that in these years increasing attention was devoted to export and foreign markets were regarded as of more importance for Japanese goods than home markets.

OUTPUT AND EXPORTS OF SILK GOODS IN 1913 AND 1920

Years.	Output (Yen 1,000).	Exports (Yen 1,000).	Export
			Percentage of Total Output.
1913	120,326	29,364	25
1920	467,392	167,101	36
Increase	347,066	137,737	—
Increase percentage com- pared with 1913	289	469	—

Before the War *habutæ*, which can hardly be called finished goods, accounted for 85 per cent of the total value of silk exports. Although it reached a high record in 1918, *habutæ* for export showed no tendency whatever to increase, and the percentage gradually diminished, remaining at 40 per cent in 1923. On the other hand, exports of silk manufactures other than *habutæ* increased their percentage from 15 to 60 during the period of 1914-1923. In other words, semi-finished silks like *habutæ* have now been replaced by the wholly manufactured ones, such as satins, taffetas and poplins, chiffon, Fuji silk and crepes in the Japanese silk trade, apart from export of raw silk.

TOTAL EXPORT VALUE OF SILK GOODS DURING AND AFTER THE WAR

Years.	Total Value (Yen 1,000).	Habutæ.		Percentage.	
		Value. (Yen 1,000).	Quantities. (Tan).	Habutæ.	Others.
1914	36,393	30,890	2,387,000	85	15
1915	45,952	38,557	3,182,000	84	16
1916	54,957	41,276	2,731,000	75	25
1917	67,520	47,482	2,703,000	72	28
1918	126,513	70,178	3,259,000	55	45
1919	170,079	101,290	3,136,000	60	40
1920	167,101	91,223	2,697,000	55	45
1921	93,122	43,558	2,042,000	47	53
1923	95,495	38,305	1,288,751 kin	40	60

(Tan = about 30 feet.)

EXPORTS OF MAIN SILK GOODS
(excluding Habutæ)

Articles.	1912.	1916.	1918.	1920.	1923.
Kaiki :					
Value (yen 1,000)	240	184	457	355	84
Quantity (yds. 1,000)	712	271	416	230	63
Satins :					
Value (yen 1,000)	702	2,471	5,799	9,886	7,363
Quantity (yds. 1,000)	1,425	3,776	5,324	6,919	6,680
Taffetas and poplins :					
Value (yen 1,000)	847	859	1,691	2,277	667
Quantity (yds. 1,000)	1,365	1,075	1,420	1,886	469
Chiffon :					
Value (yen 1,000)	251	119	322	537	146
Quantity (yds. 1,000)	714	282	379	694	200
Pongee and Fuji silk :					
Value (yen 1,000)	—	—	—	23,802	33,394
Quantity (yds. 1,000)	—	—	—	27,134	30,163
Kabe-ori and crepes :					
Value (yen 1,000)	684	2,844	22,275	27,793	8,995
Quantity (yds. 1,000)	45	2,707	14,787	11,399	5,019
Silk handkerchiefs :					
Value (yen 1,000)	4,711	4,325	7,603	8,685	3,166
Quantity (dozen)	1,686	1,756	2,312	2,153	642

Thus, the comparison between the figures in 1912 and 1920 shows an entire increase in all items of finished goods. Although in 1923 exports in value as well as in quantity declined in several items, owing to the post-war depression and the great earthquake, it is very noticeable that new products, such as pongee and Fuji silk, have shown a striking increase.

Three Factors of Development.

Owing to the increasing demand and the rise of prices, the silk manufacturing industry has made rapid strides in respect of its number of weaving machines and productive capacity during the last few years. In connection with this the most noticeable things are as follows: (1) The increase of workers. (2) The increase of modern machinery. (3) Production of double-width cloth.

1. The Increase of Workers.—The number of workers employed in this industry is said to be the best sign of its expansion and prosperity, and also shows the great progress which silk weaving has made during and after the War.

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The total number of men employed in the work in 1913 was 1,797, women were 5,660; and these numbers increased yearly until they reached respectively 6,194 and 15,592 in 1921, despite the post-war depression.

FIGURES SHOWING YEARLY INCREASE OF WORKERS IN SILK MANUFACTORIES

Years.	Male.	Female.	Total.
1913 . . .	1,797	5,660	7,457
1915 . . .	2,201	7,183	9,384
1916 . . .	2,858	8,735	11,593
1917 . . .	4,100	9,466	13,560
1918 . . .	3,806	9,770	13,576
1919 . . .	4,642	12,598	17,220
1920 . . .	5,066	12,943	18,003
1921 . . .	6,194	15,592	21,786

2. Increase of Modern Weaving Machines.—The kinds of machines in use in the industry can be roughly divided into three, viz. hand- and treadle weaving instruments and power machines. The first two are naturally the more simple machines by which weaving is done in rather remote districts, and are now decreasing in number, as was the case with hand- and foot-reeling methods of the raw silk industry. Power weaving machines, on the contrary, are now used extensively, and are increasing in number, which undoubtedly means the unification of production and mechanical progress in the industry. In order to make this clear we take figures of weaving machines according to the above classification in the two Prefectures, Fukui-ken and Ishikawa-ken, which are the most noted for this industry, as it is impossible to obtain total numbers throughout Japan:

NUMBER OF MACHINES IN FAMILY AND FACTORY WORKS IN FUKUI-KEN AND ISHIKAWA-KEN

Years.	Power Machines.	Hand Instruments.	Treadle Instruments.	Total.
1913 . . .	14,777	18,154	1,768	34,699
1916 . . .	22,232	3,762	2,178	28,172
1919 . . .	42,830	5,926	3,072	51,828

3. Increased Production of Double-Width Cloth.—As shown in the foregoing tables, the value and the quantity of silk goods have increased rapidly during recent years. What we have to draw attention to most especially is the increase of output of double-width materials which are produced mostly for foreign demand, as the single width is only for kimono material size. In other words, the former is mainly for the foreign markets and the latter for home consumption; therefore, the increased output of the former means the increase of foreign demand for Japanese silk.

OUTPUT OF SILK GOODS DURING AND AFTER THE WAR

Years.	Materials Mainly for Kimono.		Crepes and Habutés. (Double width).		Materials for Obi.	Others.	Total.
	Quantity. (Tan 1,000).	Value. (Yen 1,000).	Quantity. (Yds. 1,000).	Value. (Yen 1,000).			
1915	16,512	107,010	6,658	4,285	5,832	4,560	121,687
1916	15,476	135,970	6,343	7,786	7,381	8,949	160,086
1917	20,354	180,910	9,643	10,970	9,698	18,145	219,723
1918	24,181	306,250	14,049	18,600	13,655	39,394	377,899
1919	25,253	492,780	35,270	68,071	23,898	89,189	673,838
1920	25,726	381,349	16,433	24,583	21,262	40,268	467,362

(Tan=about 30 feet.)

The Present and Future of the Silk Industry.

The fluctuation of prices, the temporary decrease of home and foreign demand and the appearance of substitutes, such as artificial silk goods, gave a set-back after the War. But these difficulties are being overcome, and there is every reason to believe that silk manufacturing will regain and hold its place of importance among the industries of Japan.

At the present time the industry is in the transition stage, passing from a domestic industry to the factory system. Large-scale factories have not yet been built. Of the existing ones most are under private management, and the limited liability company is not very frequently met with in the industry.

Considering that silk manufacturing was first established in Japan about 1600 years ago and that silk goods were first exported about fifty years ago, the actual industrial progress seems rather slow. This is to be accounted for

by the fact that the industry is peculiarly a conservative one, having special characteristics which hinder it from developing on modern industrial lines. Silk goods are chiefly used as high-class dress material, and are regarded as articles of luxury. The producer of them is, therefore, at the mercy of fashion. He must be prepared for constant change in his methods and be ready to supply the hectic demand for a novelty. His reserve must, therefore, be very great, and he must produce cautiously. Manufacturers obviously cannot undertake to enlarge their factories and enter into large-scale production in such circumstances. It is, therefore, not surprising that the industry is but slowly emerging from the family system, and that it cannot quickly expand on the latest industrial lines.

However, the industry may be counted upon to develop should the under-mentioned conditions be fulfilled, because there are possibilities of an ample supply of raw silk and a likely increase in demand in the future.

(a) Technical improvement in weaving and dyeing methods, and study of fashionable devices and designs.

(b) Adoption of double-width weaving system.

(c) Direct connection with silk reelers. It is necessary to encourage silk reelers to produce superior raw silk, in order to manufacture more refined and better quality goods to compare favourably with European and American silk goods.

(d) Encouragement of production of finished goods. Although the tendency has been to export finished silk goods to an increasing extent, the silk exports still largely consist of raw silk and semi-finished goods, the largest item of which is habutæ, which cannot be said by any means to be wholly finished goods. Furthermore, from the point of view of employment, to encourage the production of finished goods is the most essential and salutary policy for a country like Japan, as it not only improves the industry, but provides further employment of the people.

(e) Improvement of organization. The present state of

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the industry, as mentioned before, is rather an unsatisfactory one, owing to the transition from family work to factory system. Progress should be a gradual process, and in order to facilitate large-scale production and promote the export of silk goods, factories should be extended on larger lines.

The fact that a few large textile companies, such as the Fuji Gasu Boseki Kaisha, the Kanegafuchi Boseki Kaisha, the Dainihon Boseki Kaisha, have recently very successfully started the silk-weaving business on a large scale in addition to their original business of cotton manufacturing, shows that large-scale organization of production is possible in the industry and remunerative under efficient management.

At the same time, it is worth considering that family works and cottage factories could be unified or amalgamated under more effective organization, such as the co-operative system, or whatever else is suitable according to circumstances of districts and the enterprisers concerned.

CHAPTER II

COTTON INDUSTRY

Development of the Cotton Industry.

A FEW years before the Meiji Restoration the cotton industry was first established under modern methods and organization by Lord Shimadzu, of Satsuma, who was the pioneer in the adoption of Western cotton machinery. Although the cotton and weaving industry had been in existence for hundreds of years in Japan, it was always in a primitive state until Western machinery was introduced. After the Restoration the industry rapidly developed, and its progress is one of the most remarkable phases of Japan's industrial development.

It is needless to remark that the position of the cotton industry in Japan is of great importance, seeing to what an extent her foreign trade depends on the cotton industry. Thus, in 1923, approximately 19 per cent of the total value of exports was represented by cotton goods. The most important items are cotton fabrics, the exports of which have been steadily increasing of late years, and not only have they become next to raw silk in importance as an export commodity of Japan, but they have also caused keen competition and attention among the cotton countries in Europe. The steady increase of cotton exports to China, India and even African and Mediterranean ports has been so noticeable that the Western countries' prestige in these markets seems to be gradually decreasing.

Judging from increased output, the number of mills and the amount of capital invested, the development which the cotton industry has achieved up to the present may be analysed according to the following periods :

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1. The Beginning of the Industry from 1868 to 1885.

During this period the mills were mostly run by the Government and ex-feudal lords or by a few private firms aided by the Government. The scale of the mills was very small at this time, and home cotton goods were often threatened even by those of Indian manufacture.

2. The Beginning of the Development of the Industry from 1886 to 1893.

At an early stage of this period the currency system was stabilized, and, like all other industries during this period,

EXPORT VALUE (YEN 1,000) OF COTTON GOODS

Years.	Cotton Tissues.	Cotton Bags.	Cotton Handker- chiefs.	Cotton Towels.	Cotton Yarns Up to No. 20.	Over No. 20.
1869	6	—	—	—	—	—
1893	1,109	—	—	—	59	—
1898	2,597	—	10	255	20,116	—
1903	6,875	—	37	953	29,784	1,634
1908	4,611	—	111	1,313	19,125	1,598
1913	33,605	—	50	2,641	57,952	13,045
1914	34,840	—	41	2,321	64,682	13,871
1915	38,511	—	135	2,045	50,104	16,106
1916	60,050	—	581	3,266	56,132	21,459
1917	127,458	1,268	666	3,009	74,426	33,712
1918	237,913	2,306	1,265	3,359	96,459	61,842
1919	280,311	1,701	1,582	3,784	61,093	53,138
1920	334,966	2,178	1,451	4,839	79,896	72,497
1921	203,673	551	411	1,390	46,629	33,938
1922	222,052	639	282	1,413	66,174	48,548
1923	234,756	427	365	2,101	34,206	44,305

the cotton industry developed rapidly. Exports of cotton tissues first took place, and the number of mills and spindles in 1893 was twice as many as in 1885. However, the cotton output was not yet sufficient to supply the home consumption.

3. Remarkable Strides during this Third Period between 1894 and 1913.

Two great wars broke out, i.e. the Japanese-Chinese War and the Japanese-Russian War, which gave great opportunities for developing the industry. The remission of duty

on imported raw cotton and the withdrawal of export duty on cotton yarn facilitated the industry and encouraged the export. Direct importation of cheap Indian raw material replaced Chinese raw cotton. Up to that time China had been the chief source of raw material for the Japanese cotton industry. The firms which were greatly developed by the post-war boom which followed directly after the war with China, were again favoured by the victorious end of the Japanese-Russian War. Encouraged by the vast amount of importation of foreign capital the industry rapidly expanded. Statistics of the industry, which are given below, at the end of the period show how remarkable was the progress made during the period compared with the previous one.

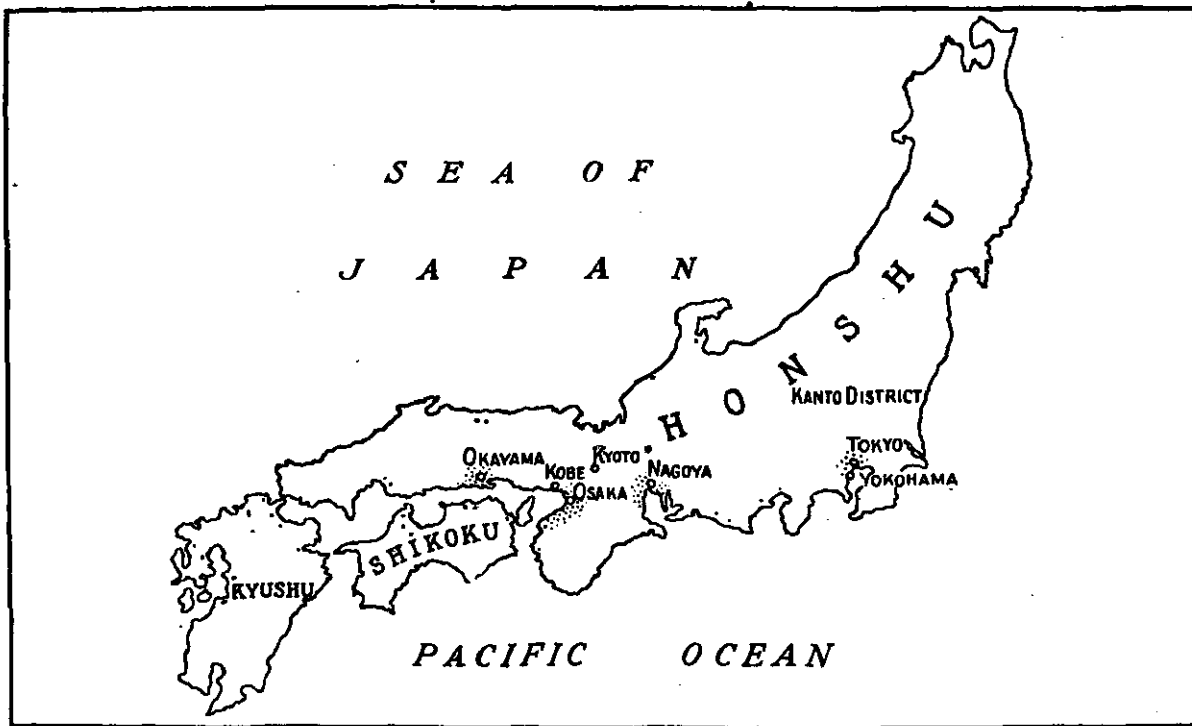
4. The Recent Development of the Industry in the Period after the Great War.

An unprecedented progress was experienced, especially after 1917. One hundred and sixty new firms were established, the aggregate capital of which was yen 369,600,000, and fifty-seven firms increased their capital by yen 204,000,000 between 1916-1921. Mills and spindles multiplied in number. Although the post-war depression gave a severe set-back to the industry and the capital invested was reduced to a great extent, the output and export of cotton goods increased considerably. Thus, the cotton industry of Japan has reached its present development in the last half century.

These four periods can be distinctly observed in the table given below.

NUMBER OF MILLS, SPINDLES AND OUTPUT

Years.	Number of Spinning and Weaving Mills.	Number of Spindles.	Output of Yarns (Bales).	Cotton Cloth (1,000 Yards).
1885	20	65,420	Not available	Not available
1893	40	414,758	414,758	"
1908	51	1,381,306	801,738	147,443
1913	152	2,414,400	1,517,982	416,725
1921	217	4,161,126	1,811,350	700,698
1922	232	4,517,612	2,228,246	889,328
1923	241	4,436,798	2,171,153	1,000,709



THE DISTRIBUTION OF COTTON MILLS IN JAPAN
(From "The Far Eastern Review," p. 324, July, 1924)

The decrease in the number of spindles and in the output of yarns in 1923 was mainly due to the disastrous damage done by the earthquake and subsequent fire. The cotton spinning and weaving mills in the Kwanto district were seriously impaired. However, reconstruction work was speedily planned, and by the end of 1923 the manufacturing capacity was greatly restored.

There were seventy cotton spinning and weaving companies at the end of 1923, of which sixty were members of the Japan Cotton Spinners' Association. The total authorized capital of these companies amounted to yen 530,277,650 at the end of 1923, and of this yen 372,272,940 was paid up, the reserves being yen 217,407,900.

It is interesting to note that the cotton industry is more or less concentrated in the central part of Japan—Osaka, Nagoya and Okayama being the three chief cotton districts. The reasons for the industry being centred in these districts are: (1) There is greater shipping convenience to foreign markets, especially to China, India and the South Sea Islands than from the Kwanto district; (2) these cotton districts are the industrial and commercial parts of Japan. Moreover, the importance which these districts hold in the industry has been increased since the earthquake, because they suffered less from the earthquake than the Kwanto district.

Causes of the Development.

In spite of the fact that Japan has many disadvantages, which will be mentioned later, and that keen competition from England and America has always confronted her, and also that Japan is entirely dependent upon the importation of foreign raw cotton, the reasons why the industry in Japan has shown such remarkable progress are mainly the following:

1. The industry is suitable for Japanese workers because of its working process.
2. Low wages, especially cheap women's labour in respect of low-grade production, cheapens the cost of production.

3. Japan is situated near large markets such as China and India.
4. The Protective policy towards this industry not only keeps away foreign goods from the home market, but also enables Japanese firms to recover any loss occasioned by low quotations for export by raising prices in the domestic trade.
5. The big combined organizations facilitate the cotton export.

In Japan there are various middlemen who conduct the business through spinners and weavers and finishers on the same basis as in European countries. However, so far as the cotton export trade is concerned, many Japanese spinners are also weavers, and in some cases finishers. Thus, the yarn produced by these firms never passes through the hands of the middlemen, but is delivered as finished goods direct to the exporters. Therefore, the prices for export are often below those at which they sell for domestic consumption. In fact, Japanese manufacturers are favoured by having a closer control over the different branches of their trade. The big combined organizations which have been acting as important factors in the development of the Japanese cotton industry, may be said to be another cause of her progress in this industry.

Statistics of the Cotton Industry.

1. Consumption of Raw Cotton. As mentioned elsewhere, raw cotton used in Japan is almost totally derived from foreign sources, especially from British India, United States of America and China. Consumption of raw cotton increased 43 per cent between the years 1913 and 1923.

CONSUMPTION OF RAW COTTON IN JAPAN

Years.	Quantity (Kan).	Years.	Quantity (Kan).
1913 . .	85,455,343	1914 . .	94,062,892
1915 . .	95,938,546	1916 . .	106,470,428
1917 . .	108,713,235	1918 . .	102,387,376
1919 . .	107,706,459	1920 . .	102,277,957
1921 . .	103,265,619	1922 . .	125,745,569
1923 . .	122,364,316		

(Kan=8.26 lbs.)

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Comparative statistics of raw cotton import into Japan, according to the countries, during 1922 and 1923 are as follows :

Countries.	1923 (Yen).	1922 (Yen)
British India	263,026,162	209,897,193
United States of America	177,550,743	178,808,772
China	39,221,014	28,521,188
French Indo-China	616,061	922,995
Africa	19,541,260	8,464,530
Dutch East Indies	209,278	615,510
Siam	34,929	—
Straits Settlements	820,257	523,760
Others	12,151,756	86,943
Total	513,171,460	427,840,891

2. Production and Consumption of Cotton Yarn.—The production of cotton yarn in Japan has shown a wonderful increase in accordance with the rapid increase of raw cotton consumption. Export of cotton yarns, however, decreased after the Great War, while, on the contrary, its import has been increasing as seen in the following table, which also gives the approximate figures of the domestic consumption of cotton yarn :

PRODUCTION, EXPORT AND IMPORT, CONSUMPTION OF COTTON YARN IN JAPAN (BALES)

Years.	Production.	Export.	Import.	Consumption.
1914	1,666,184	596,990	607	1,096,798
1915	1,720,264	575,891	588	1,449,615
1916	1,925,579	547,147	660	1,379,092
1917	1,923,841	470,852	1,004	1,453,893
1918	1,803,666	421,512	1,008	1,383,542
1919	1,920,782	230,333	8,907	1,699,356
1920	1,816,976	304,925	5,121	1,517,172
1921	1,811,350	292,260	2,579	1,521,569
1922	2,228,246	394,062	3,126	1,787,310
1923	2,171,153	248,324	6,332	1,929,161

Balé=300 kin.

The decrease in export of cotton yarn, mostly of low grade, is the most significant event in the recent history of the Japanese cotton industry. The decline in export to China and Hongkong is specially noteworthy.

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VALUE OF COTTON YARN EXPORTED FROM JAPAN

Countries.	1923 (Yen).	1922 (Yen).
China	58,503,001	66,255,072
Hongkong	11,534,733	23,478,306
Philippines	771,632	910,275
Kwangtung Province	3,881,021	5,891,325
British India	20,511,884	20,666,783
Asiatic Russia	54,255	53,460
Dutch East Indies	<u>1,304,454</u>	<u>—</u>
Total (including others)	78,511,961	104,723,255

According to statistics issued by the Japan Cotton Spinners' Association, there were 4,849,892 spindles in Japan at the end of June, 1924, which is more than double the pre-war number.

NUMBER OF SPINDLES (End of each year)

Years.	Spinning Spindles.	Mules.	Doubling.
1913 . . .	2,364,995	49,405	320,812
1914 . . .	2,606,004	51,170	348,766
1915 . . .	2,754,124	53,390	355,318
1916 . . .	2,825,944	49,960	370,681
1917 . . .	3,008,568	51,910	383,458
1918 . . .	3,175,763	51,910	384,872
1919 . . .	3,435,932	52,330	410,690
1920 . . .	3,761,250	52,330	466,460
1921 . . .	4,116,616	44,510	533,334
1922 . . .	4,472,112	45,500	602,032
1923 . . .	4,422,428	14,370	510,031
1924 (June) . . .	4,832,552	17,340	581,583

3. Output of Cotton Cloth.—The annual approximate output of cotton cloth and number of looms are as follows :

OUTPUT OF COTTON CLOTH AND NUMBER OF LOOMS

Years.	No. of Looms.	Output of Cloth (yards).
1914 . . .	25,443	504,902,000
1915 . . .	30,065	512,017,000
1916 . . .	31,293	561,210,000
1917 . . .	36,181	594,649,000
1918 . . .	36,181	656,935,000
1919 . . .	40,391	738,956,000
1920 . . .	44,401	761,037,000
1921 . . .	50,583	700,698,000
1922 . . .	60,756	889,328,000
1923 . . .	61,421	1,000,709,000

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The importation of weaving and spinning machinery into Japan during 1923 was valued at yen 24,000,000, or a decrease of yen 7,900,000 on that of 1922. It was, however, more than four times greater than the pre-war amount so far as the total value is concerned. This enormous increase means that Japan requires more machinery for weaving and spinning, owing to the recent development of the cotton industry, and to the fact that the Japanese engineering industry is not sufficiently advanced to provide exquisite machines such as those used in the cotton industry.

IMPORTS OF WEAVING AND SPINNING MACHINERY

Years.	Weaving (Yen).	Spinning (Yen).	Total (Yen).
1913 . . .	849,616	5,069,793	5,919,409
1914 . . .	726,067	5,332,391	6,058,458
1915 . . .	343,902	1,335,579	1,679,481
1916 . . .	88,278	2,408,542	2,496,820
1917 . . .	521,431	4,791,486	5,312,917
1918 . . .	657,753	8,557,833	9,215,586
1919 . . .	1,391,518	13,864,152	15,255,670
1920 . . .	1,374,845	18,163,921	19,538,766
1921 . . .	1,973,015	29,180,085	30,153,101
1922 . . .	1,333,340	30,596,030	31,929,370
1923 . . .	1,335,484	22,690,053	24,025,539

4. Number of Working Spindles and Looms.—Though the actual number of spindles and looms established in such a short time is very great, the working number is much less than the actual one. Working days have been reduced to twenty-six monthly, with an average day of nineteen hours in two shifts in spinning and thirteen hours in weaving.

AVERAGE WORKING NUMBER OF SPINDLES, LOOMS, HOURS AND DAYS

Years.	Spinning Spindles.	Working Days.	Hours a Day.	Weaving Looms.	Working Days.	Hours a Day.
1919	3,179,000	328	21·84	39,455	310	14·09
1920	3,191,000	316	20·52	44,040	313	12·39
1921	3,162,000	306	19·51	44,109	300	11·80
1922	3,967,000	315	21·07	51,032	302	12·35
1923	4,079,000	311	19·02	52,971	297	12·85

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5. Number of Workers.—The number of workers in the cotton spinning industry reached 193,487 in 1921, but decreased to 151,635 in 1923, owing to the economic setback caused not only by the post-war depression but by the earthquake of September, 1923. However, the present number of workers employed is still about twice that of 1907.

NUMBER OF WORKERS IN THE COTTON SPINNING INDUSTRY

Years.	Men.	Women.	Total.
1907 . . .	14,879	62,001	76,880
1908 . . .	15,265	58,960	74,225
1909 . . .	18,431	70,894	89,325
1910 . . .	17,698	73,821	91,519
1911 . . .	16,921	71,628	88,549
1912 . . .	19,428	82,326	101,754
1913 . . .	21,264	93,724	114,988
1914 . . .	22,420	93,585	116,005
1915 . . .	23,951	100,894	124,845
1916 . . .	26,632	103,018	129,650
1917 . . .	29,006	104,869	133,875
1918 . . .	33,450	116,212	149,662
1919 . . .	40,141	135,676	175,817
1920 . . .	37,911	125,923	163,834
1921 . . .	45,334	148,153	193,487
1922 . . .	42,130	135,431	177,561
1923 . . .	36,724	114,911	151,635

6. Capital and Profits.—The following table shows the total paid-up capital and profits of all the companies who are the members of the Japan Cotton Spinners' Association. The association represents nearly 90 per cent of the whole industry in respect of capital and profits. Therefore, it can be taken that the table gives a rough but reliable indication with regard to the recent financial state of the cotton spinning industry in Japan.

CAPITAL AND PROFITS OF THE COTTON SPINNING COMPANIES

	1919.	1923.
Paid-up capital	Yen 162,359,000	Yen 319,087,000
Reserved Fund	.. " 139,073,000	.. " 217,207,000
Net profits	.. " 128,619,000	.. " 60,274,000
Amount of dividends	.. " 76,889,000	.. " 59,404,000
Average rate of dividends	51%	19%

Post-War Depression and the Industry.

Thus, the development of the cotton industry as shown for the last half century has been phenomenal. In fact, it is usually regarded as one of the most successful industrial achievements Japan has ever made.

The cotton industry, however, was one of the first to be affected by the post-war depression, especially the newly established companies formed during the abnormally profitable period were in great financial difficulties as soon as the war time boom was over. Consequently they had to be reorganized, and wholesale amalgamation and reduction of capital took place during 1920-1922. Adjustment of the industry, which means putting the unnaturally inflated state of the industry into normal and healthy condition, was, and is still, one of the vital post-war problems.

Of the increase of spindles during the War, about 66 per cent was stock the old companies had already acquired, and the remaining 34 per cent was the new stock purchased after the War began. It is generally understood that the old companies which are known as the "big nine"¹ have sound financial basis, ample experience and capable management. The percentage of the total number of spindles and output of cotton yarn held by the new companies is roughly 15 per cent and 11.7 per cent respectively, the remaining 85 per cent and 88.3 per cent being held by the big nine. Therefore, it will be understood that the effects of the post-war economic depression, which was mostly felt by the new companies, were not of so serious a nature to the general state of the industry, because the old companies managed to adjust themselves by drawing on their financial resources and by improving their management. In other words, the inflated state of the industry was remedied mainly by the reorganization of the old companies.

¹ The "big nine" are as follows :

Kanegabuchi Boseki, K.K.	Fukushima Boseki, K.K.
Fuji Gasu, K.K.	Kishiwada Boseki, K.K.
Dai-Nippon Boseki, K.K.	Kurashiki Boseki, K.K.
Toyo Boseki, K.K.	Nisshin Boseki, K.K.
Godō Boseki, K.K.	

(K.K. = Kabushiki Kaisha = Ltd. Co.)

Tendency of High-Grade Production.

The most vital problem which the industry has to face at present is how to increase the output of higher grade goods, which is of greater importance than the increased production of lower grade goods. But it is uncertain whether the grade of Japanese cotton products will be further improved in quality. From the point of view of industrial process, the production of low-grade cotton yarn is the first attempt of the industry, as it can easily be provided without skilled labour, and, furthermore, by a plentiful supply of cheap labour. When the industry is first established in a country and attains a certain degree of development, competition of home goods will reduce the amount of imported goods, as home-manufactured yarns will be cheaper than foreign goods, owing to low cost of labour. The chief countries in Europe had this common process in the early days of the cotton industry. Their low-grade yarns expelled foreign goods from the home market in the first place, and ultimately became keen competitors in international markets. As a consequence, the older countries tend to explore markets where there is less competition. It is clear that in the competition between junior and senior countries in respect of low-grade cotton goods, the former have, generally speaking, greater advantages in regard to the cost of labour, which is the chief factor in manufacturing low-grade goods. What the older countries have to do in order to meet the new competitors is to encourage the production of higher grade goods with which the younger countries are still unable to compete, or to retain their home customers with the aid of high tariffs. After having been successful in expelling foreign yarns from the Japanese markets since 1889, the Japanese cotton industry has followed the common course of development, invading the Indian and Chinese markets and progressing normally to its present stage.

Thus, at the present time, cotton goods have been the most important product as well as the second largest item of export as described before, the details of which can be seen in the following :

EXPORTS OF MAIN COTTON GOODS

Articles.	1913.		1923.	
	Quantity.	Value (Yen 1,000).	Quantity.	Value (Yen 1,000).
Yarns up to No. 20, kin	117,026,000	57,952	40,315,000	34,315
" over No. 20, kin	19,024,000	13,045	34,182,000	44,305
Bags, pieces	—	—	2,791,000	427
Handkerchiefs, dozen	101,000	50	430,000	365
Towels, dozen	3,013,000	2,641	495,000	2,101
Threads, kin	239,000	212	552,000	733
Striped tissue, tan	360,000	314	2,363,000	11,920
Imitation nankeens, tan	7,816,000	6,041	41,016,000	5,843
Drills, yard	70,070,000	8,441	64,881,000	17,945
Twilled shirting, yard	—	—	115,669,000	29,110
Crepes, yard	12,810,000	1,890	22,513,000	5,894
Flannels, yard	12,807,000	1,247	28,496,000	9,468
Grey shirtings and sheetings, yard	95,056,000	11,198	332,478,000	92,026
White shirtings and sheetings, yard	4,783,000	532	22,149,000	6,073
Dyed shirtings, yard	2,295,000	252	16,488,000	4,069
Cotton prints, yard	—	—	35,753,000	9,125
Tea cloths, yard	12,874,000	1,330	43,289,000	10,710
Ducks, yard	806,000	256	2,159,000	1,219
Satins, yard	99,000	29	24,770,000	11,037
Poplins, yard	—	—	5,360,000	3,467
Blankets, kin	354,000	213	1,682,000	2,428

IMPORTS OF MAIN COTTON GOODS

Articles.	1913.		1923.	
	Quantity.	Value (Yen 1,000).	Quantity.	Value (Yen 1,000).
Raw cotton in seed, kin	26,405,000	2,118	7,750,000	1,108
" ginned, kin	644,212,000	231,480	876,870,000	512,064
Yarns, kin	—	—	59,000	2,218
Plushes and other pile tissues, yard	3,091,000	1,858	820,000	1,273
Flannels, yard	463,000	167	54,000	30
Grey shirtings and sheetings, yard	9,577,000	1,221	784,000	269
White sheetings, yard	8,172,000	1,184	2,054,000	807
Satins, yard	15,816,000	3,433	1,290,000	853
Total of cotton tissues	—	10,083	—	7,483

In comparing the above two tables, the remarkable increase on all items of export with the exception of cotton yarns up to No. 20 and cotton towels is noteworthy.

Finished goods, such as shirtings and sheetings (grey or white), crepes, flannels, cotton satins, appear to have usurped the position which cotton yarns previously held in cotton exports. At the same time, the import of cotton manufactured goods of all kinds is rapidly decreasing. However, the increase of raw cotton (ginned) import was the exception. The quantity imported was 644,212,000 kin in 1913 and 876,870,000 kin in 1923, or 232,658,000 kin increase. It is obvious that in consequence of the develop-

ment of the industry in Japan, raw cotton is greatly needed in order to manufacture finished goods, the output of which is now able to supply home consumption as well as meet foreign demands. Thus, as mentioned above, Japanese cotton goods are now not only taking the place of imported goods in Japan, but also causing keen competition in foreign countries, such as China, India, Philippine Islands and other Eastern countries.

Referring to the foregoing table, what must not be overlooked is that export of low-grade yarns (up to No. 20) in 1913 was over six times in quantity and four times greater in value than that of higher grade yarns (over No. 20) in the same year. However, this proportion was greatly altered in 1923, as the export of the former decreased to nearly one-third its 1913 quantity and the export of the latter increased greatly, the volume of which exceeded that of the low grade in 1923. This same tendency has occurred in the output of cotton yarn. Fifteen years ago the output of low-grade yarn (up to No. 20) held 88·7 per cent of the total production, while that of high-grade (over No. 20) only 11·3 per cent. However, this proportion has greatly altered, the latter rapidly increased and the former decreased. This can be seen in the following table :

Years.	Total Output of Cotton Yarn (Bale).	Up to No. 20.	Over No. 20.
1907 . . .	985,591	88·7	11·3
1908 . . .	893,005	86·1	13·9
1909 . . .	1,042,385	84·0	16·0
1910 . . .	1,174,936	87·2	12·8
1911 . . .	1,166,125	84·3	15·7
1912 . . .	1,414,835	82·7	17·3
1913 . . .	1,692,892	81·7	18·3
1914 . . .	1,666,184	80·4	19·6
1915 . . .	1,720,264	81·3	18·7
1916 . . .	1,925,579	78·1	21·9
1917 . . .	1,923,841	76·0	24·0
1918 . . .	1,803,666	71·3	28·7
1919 . . .	1,920,782	69·4	30·6
1920 . . .	1,816,976	69·6	30·4
1921 . . .	1,811,350	73·8	26·2
1922 . . .	2,228,246	72·4	27·6

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Now we must consider the reasons for this change. They are mainly due to (1) development of the Japanese weaving industry, which needs higher grade yarns more than low-grade ones, and (2) to keen competition from China and Indian low-grade yarns.

Japanese Cotton Industry and Chinese Competition.

The great supply of cheap labour has contributed in a great part to the development of the cotton industry in Japan. According to the report of the Agricultural and Commercial Department, the average wage paid to male and female operatives in the spinning industry was only yen 0.265 and yen 0.163 a day respectively in 1899. However, Japanese labour is no longer so cheap as formerly. Wages rose rapidly during the Great War, and reached yen 1.479 per day for male and yen 1.185 for female labour in 1923. Taking 100 as the index number for 1913, the figure for male workers was 375 in 1920 and was still 337 in 1923. Corresponding figures for female operatives are 397 and 393.

Years.	Men (Yen.)	Women (Yen.)	Years.	Men (Yen.)	Women (Yen.)
1899 . .	0.265	0.163	1918 . .	0.686	0.476
1903 . .	0.326	0.206	1919 . .	1.116	0.870
1906 . .	0.365	0.228	1920 . .	1.567	1.196
1909 . .	0.425	0.267	1921 . .	1.463	1.134
1911 . .	0.434	0.272	1922 . .	1.543	1.240
1913 . .	0.439	0.301	1923 . .	1.479	1.185

In addition, the number of work hours to-day is two or three less than pre-war, which means that wages have increased more than the above table indicates. Thus the cost of production of cotton yarns, of which wages is a great factor, has obviously increased. This is the very reason why Japanese low-grade yarns seem to have poor prospects in the field of commercial competition with Chinese goods. Aided by the low rate of wage, as shown on page 138, Chinese yarns have withstood effective competition in just the same manner as Japan struggled against foreign goods in the home as well as in the international market before the Great War.

CHINESE COTTON SPINNING OPERATIVES' AVERAGE WAGE PER DAY

	1922	
	Men (Yen).	Women (Yen).
Skilled	0.35-0.60	0.30-0.50
Unskilled	0.30-0.50	0.20-0.30
Children (above 15)	0.20-0.30	0.10-0.20
„ (under 15)	0.10-0.20	0.07-0.10

The cotton industry in China has made wonderful strides during the last decade. There were 2,516,000 spindles at work at the end of 1923, which is an increase of 450 per cent compared with the pre-war number. As a consequence, the import of Japanese cotton yarns to China has decreased rapidly, and, in addition, Chinese yarns are now exported to Hongkong, Straits Settlement, Siam and India. A prosperous future is predicted for the Chinese cotton industry, owing to its advantages of abundant cheap labour and raw material. On the completion of the projected expansion of factories, which will establish 1,100,000 spindles in a year or two, a great increase of output of cotton yarns is expected in China, especially of low-grade yarns. In this case Japanese low-grade cotton yarns will not be able to compete against Chinese yarns either in China or other countries where Japanese goods are usually supplied.

This is further borne out by the fact that the principal Japanese cotton companies have established or are about to establish mills in China, in order to manufacture the cheap goods with cheap Chinese labour.

COTTON COMPANIES IN CHINA
(1923)

Nationality.	No. of Company.	No. of Spindles at Work.	No. of Spindles under Construction.	No. of Looms.
English	5	257,866	—	2,800
Japanese	16	621,826	466,928	2,986
Chinese	77	2,515,840	1,094,880	13,403
Total	98	3,395,532	1,561,808	19,189

Thus, owing to the rapid progress of the Chinese cotton industry and the high cost of Japanese labour, the industry in Japan has to face great difficulties. This is a grave problem which will have to be seriously considered by Japanese industrialists without delay, as the progress made by the Chinese cotton industry means to Japanese companies not only the loss of one of their largest customers, but also the establishment of a formidable competitor in the future. It is feared that the Japanese cotton industry will sooner or later be superseded by competition. In fact, the export of Chinese yarns to Japan increased from yen 1,055,000 in 1920 to yen 2,218,000 in 1923, in spite of the tariff of from yen 5.80 upward per 100 kin. In 1918 her export was the small amount of yen 17,000 and yen 1,000 in 1913. Chinese yarns imported into Japan are mostly low-grade goods. What does the increasing import of Chinese cotton yarn mean? It means that Chinese cotton yarn is cheaper than Japanese owing to the high cost of production of the latter.

So far as the low-grade products are concerned the industry in Japan suffers from several disadvantages. The chief ones are high wages, high cost of raw material, shorter working hours and insufficient labour, as compared with China. It will be answered that the industry in Japan must be improved, so as to enable it to spin finer yarns instead of coarse ones, and to weave high quality cloth instead of low grade. Should Japan be able to manufacture high-grade finished goods better than China, she will not only suffer less from competition of Chinese goods, but also keep China as her customer for such goods.

Japan's Position as a Cotton Country.

We have shown above that it is necessary, owing to the recent development of the cotton industry in China, to encourage high-grade cotton production in Japan. However, in the world markets for fine cotton Japan expects to meet with strong competition from the older cotton producing countries, who are already firmly established in international markets. Her greatest rivals undoubtedly

are English goods in India and American goods in China.

We often hear complaints from the Lancashire cotton people to the effect that Japan has been steadily ousting their goods from the Eastern markets. They point to the fact that Japanese cotton companies are enjoying higher dividends, owing to their successful competition against foreign goods, despite the general dullness of business which prevailed after the world post-war depression, while the average dividend of English firms was very low, about 3 per cent in 1923. It is true that Japanese firms managed to have a much higher rate of dividend. However, the high rate was not due to the reason put down by the Lancashire people, but to the fact that protection is granted to this industry in Japan, and also because combinations are permitted to keep up domestic prices ; so that firms are able to reap a rich harvest and recoup losses incurred in the export trade. In fact, being faced with many adverse factors the cost of Japanese mills has been gradually increasing, and the companies will eventually find themselves in difficulties when they are not able to pay such high dividends.

From an industrial point of view, strategic advantage in international competition is gained by an industry which has a favourable difference in cost of production, marketing facilities and technical skill. Taking the cost of production into consideration first, in the cotton industry it consists roughly of (a) cost of labour, (b) raw-cotton, (c) fuel and (d) other running expenses. The Japanese cotton industry lies at a disadvantage in regard to (b) and (c) in comparison with American and English industries, and it has an advantage in regard to (a) and (d). Though the cost of Japanese labour has risen considerably above what it was before the Great War, wages are still far below those of other European countries. Cheap Indian cotton is the main supply of raw material, and is worked by cheap labour. Therefore, as far as low-grade products are concerned Japan managed to develop her cotton industry with these advantages, in spite of the fact that she has the disadvantages of

(b) and (c). However, as finer goods are required, highly skilled labour becomes more essential, and American raw cotton has to be used instead of Indian cotton in the manufacturing of finer yarns and fabrics. In such case the cost of production is bound to rise especially in the item of wages. While there are the disadvantages of (b) and (c), which are, judging by the present progress of the industry, unlikely to be overcome, yet the advantages in regard to (a) and (d) seem to be gradually diminishing. On this account Japanese goods find it very difficult to compete with foreign goods, especially in fabrics of dyed and printed goods, even if the inferiority of technical skill of workers and marketing facilities be ignored.

In regard to the marketing organization of the Japanese cotton trade, it is far from being satisfactorily arranged in regard to foreign trade. There are many things still to be done in facilitating the trade. In England there is¹ "the large and well-organized body of shipping merchants who contribute essential services in the way of helping to get British cotton goods to consumers abroad in the exact style, quality and price required by the latter. The shipping merchant finances the goods during the final stages of production, finances the sale of the goods, and contributes a knowledge of the infinite varieties of goods and the many different characteristics of foreign markets." Thus, we see that in order to foster the cotton trade, English people concerned combine together, and manufacturers, shipping companies and financiers are on a direct line in foreign trade. The present state of Japan, however, is not well organized in this respect, owing to the existence of many small firms and the lack of knowledge on the part of manufacturing, shipping merchants and others connected with foreign markets.

Finally, the efficiency of Japanese workers is by no means so good as that of Western workers, owing to Japanese employers' negligence and to the workers' lack of experience. It is generally known that Japanese female workers, who

¹ From "Merchant Critic of the Cotton Trade" of the *Manchester Guardian Commercial*.

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represent 75 per cent of the whole number of cotton operatives, do not work on an average more than two years, owing to the severity of the work, ill-health and marriage. They are, needless to say, not fully trained. These are a great hindrance to progress of the industry. It is obvious that the efficiency of workers in the Japanese cotton industry will never improve as long as the present labour conditions continue.

COMPARISON BETWEEN JAPAN AND AMERICA REGARDING COST OF LABOUR OF NO. 20 COTTON YARN

	Japan.	America.
Raw cotton in use	80% Indian 20% American	All American.
Machinery	English make	American make
Number of workers per 1,000 spindles	25-26	6-7
Rotation of machine per minute	175	132
Day (10 hours) output of yarn per spindle	0.429 lb.	0.370 lb.
Day (10 hours) output of yarn per head	103.960 "	414.140 "
Day (10 hours) wage per head	\$0.49	\$2.43
Cost of labour per lb. yarn	\$0.004713	\$0.005864

COMPARISON BETWEEN JAPAN AND AMERICA REGARDING COST OF LABOUR OF COTTON SHEETINGS

	Japan.	America.
Width and length of sheeting	36 in. × 40 in.	36 in. × 40 in.
Kind of cotton yarn	14's-15's	14's-15's
Number of machines per head	2-3	8-10
Day (10 hours) output per machine	58 yards	50 yards
Day " " " head	145 "	450 "
Number of workers per 100 machines	75-90	13-15
Cost of labour per yard of sheeting	\$0.00375	\$0.00555

(The above tables are taken from the Report of American Customs Committee, 1919.)

Strictly speaking, a low rate of wages for inefficient labour is not cheaper in the long run than high wages for well-trained workers. To make it more clear, dividing the number of spindles by the number of operatives it is found that in Japan roughly 26 operatives are required for every 1,000 spindles, that is, 13 per shift, while in America the number per 1,000 spindles is stated to be 6 or 7. As a consequence, Japanese mills employ twice as much labour as

their American competitors. Similar calculations made as to looms show that the same ratio holds good in the weaving sheds.

We can see on page 142 the general inefficiency of Japanese workers in the cotton industry as compared with American workers. From the employer's point of view, it is considered more profitable for them to use the machines to their full capacity by employing as many workers as possible at low wages, in order to obtain the maximum output. The cost of cotton machinery is much higher in Japan than in either America or England, as it must be imported largely from those two countries. In order to cover this high cost the mills have to keep the machinery running for longer hours even though this necessitates the employment of large numbers of low-paid workpeople. Therefore, long hours and low wages are essential for the Japanese industry. In America and England, where labour is more costly and machinery cheaper than in Japan, it is undoubtedly profitable for the employer to endeavour to improve the workers' efficiency in the first place by providing them with every facility and convenience and high wages, and, on the other hand, to install up-to-date machinery in order to save labour as much as possible. Therefore, the difference between the two in respect of the number of employees is accounted for by the fact that more workers are needed in Japan than in America and England in order to produce the same quantity of goods. It is obvious that in this instance low wages do not bring relatively low cost of production. Furthermore, this will be felt more acutely in the production of high-grade goods, for which a higher standard of efficiency in the workers is essential.

I have noted elsewhere the high cost of machinery in Japan. Japanese factories have spent a large amount of capital on machinery and equipments, but also on construction and on the upkeep of other establishments, such as boarding houses and hospitals for workers, which are necessary owing to the peculiar state of the industry. The cost of these undoubtedly amounts to a much higher figure than in either America or England.

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AVERAGE COST OF ESTABLISHMENT OF COTTON INDUSTRY BEFORE THE WAR

Countries.	Per Spindle (Yen).	Per Loom (Yen).
England	16	350
America	22	490
Germany	26	476
Japan	50	800

(From *Honpo Juyo Jigyo Shi*, p. 21, published by the *Oriental Economist*.)

According to the above figures, the cost of establishments per spindle in Japan is more than treble that of England and twice that of America; the same applies to looms.

NUMBER OF SPINDLES AND CONSUMPTION OF RAW COTTON OF THE PRINCIPAL COTTON COUNTRIES

Countries.	Total Estimated No. of Spinning Spindles (June, 1924).	Consumption of Cotton in Half Year ending July 31st, 1924 (Bale).	Half Year Consumption Per Spindle (Bale).
Great Britain	56,750,000	1,377,000	0·024
France	9,359,000	543,000	0·058
Germany	9,464,000	388,000	0·041
Russia	7,246,000	294,000	0·040
Italy	4,570,000	456,000	0·099
India	7,928,000	1,140,000	0·144
China	3,395,000	713,000	0·210
Japan	4,822,000	1,174,000	0·241
U.S.A.	37,786,000	3,069,000	0·081
Total (including others)	158,047,000	10,415,000	0·066

(*The Manchester Guardian Commercial*, Oct. 2, 1924, p. 394.)

NOTE.—The original tables unfortunately do not deal with the quality of the cotton in relation to its weight.

Therefore, in the case of England, if a profit of, say, one shilling per spindle or loom can be made it allows of a 5 per cent dividend, but Japan has to make three shillings profit in order to get the same rate of dividend. Moreover,

there are other disadvantages in Japan, such as the general high rate of interest and the abnormal capital cost of the establishments which were largely expanded during the Great War when prices were very high. In order to overcome disadvantages, the policy of the firms is to work the machines at top speed day and night; but they do not make any effort to improve labour conditions. That is the reason why Japanese factories are working nineteen hours (two shifts) a day instead of eight hours as in England and ten in America. This is shown by the fact that the raw cotton consumption in Japan per spindle is higher than in any other countries, according to the figures of consumption of the first half of 1924.

The Future of the Industry.

Having described the development of the Japanese cotton industry, together with its advantages and disadvantages, it is easily seen how the industry stands, and what policy would be most beneficial for it in the future.

In the first place, what the cotton industrialists have to do for the further development of the industry is to direct their efforts towards the production of higher grade goods, i.e. from coarse yarn to fine, and from unfinished to finished cloth. As the industry in China and India has rapidly developed, Japanese spinners of coarse goods have been greatly handicapped in various respects, and they do not believe they have anything to gain in the competition with these countries. The only solution of this difficulty and the only way to keep the development on the up grade is for Japanese manufacturers to produce higher quality goods than those which competitive countries are producing at the present stage.

The present state of the industry in Japan resembles in many ways the condition of the English cotton industry at the beginning of the 19th century, which held supremacy in practically all the world markets during the said century on account of England's superior mechanical knowledge, abundant skilled labour, powerful commercial fleet and also because of the plentiful supply of cheap raw

cotton from British India. With reference to this I cite Prof. Knowles :

"The supremacy of Great Britain between 1789 and 1914 was the result of a combination of several factors.

"In the first place, she had a long start, and although that meant that she had to bear the burden of the experiments and that other countries could begin where she left off, it did mean that she had evolved a race of skilled and trained workers such as no other country in the world possessed, and this enabled her to improve upon or adapt machines invented elsewhere. Although English machines were exported in large numbers after 1825, foreigners could not work them to anything like to the same advantage as the English. This highly developed skill in engineering enabled her to acquire and develop the new trade of iron ships so that she became the world's ship-builder. It is well known that the Lancashire cotton spinner could work more spindles than any other cotton operative in the world, and that English fine yarns were unsurpassed."

(Prof. Knowles' *The Industrial and Commercial Revolution in Great Britain during the Nineteenth Century*, p. 162-163.)

However, the supremacy which Great Britain held for a century in every line of cotton products has been gradually threatened by the competition of America and Germany since the end of the 19th century, and she is also experiencing keen competition from those two countries in iron, steel and machinery.

In the first place, coarse yarns made by English spinners were expelled from the Continental markets by Continental cheap yarns, and then keen competition arose in international markets between those junior countries. As a consequence, the British cotton industry has been compelled to manufacture superior goods, and has thus kept itself ahead of other countries.

Now the time has come when Japan has to go through the same experience that England did. Of late, there is a decided opinion that the duty on imported cotton yarns, especially under No. 20, should be withdrawn, in view of the fact that the cotton industry is now able to manufacture higher grade yarns and cloth satisfactorily enough on a commercial scale instead of remaining at the stage of

spinning low-grade yarns. In all probability the increase of Chinese and Indian yarns into Japan on the withdrawal of tariff will give purchasing power to those countries, and at the same time create an opportunity for exporting Japanese finished goods to them. Again, what Japanese weavers have to pay attention to is not only the manufacture of finished goods, but also to the promotion of a new branch of the industry in which other countries are not favoured ; for example, the manufacture of cloth of silk and cotton mixed should be encouraged. This new cloth has been successfully woven by several cotton firms, and has been gaining great popularity among consumers. On the other hand, in order to achieve successful results in manufacturing finished goods, the present labour conditions in the cotton industry must most decidedly be improved to the full extent within the power of the employers. There are three necessary improvements : first, the abolition of all night work ; secondly, abolition of the system under which young female workers (before marriageable age, i.e. 19-21) are the principal operatives ; and, thirdly, abolition of the boarding system. Unless these improvements are made, efficiency and experience can never be achieved by the workers. Higher wages will, of course, be the result, but employers will in the end benefit by the workers' increase of skill. The recent establishment of mills in China is apparently wise from a short-sighted commercial point of view, but it will be regretted in the future should they neglect the more fundamental things mentioned above.

Apart from the labour question, the finishing cost in Japan is a very expensive item in the cost of production, owing to the high cost of fuel and taxation. These charges will not be lessened unless a great development of electrification takes place and taxes are reduced. Therefore, the policy of the Government should be directed towards the encouragement of the electrical industry and the reduction of taxation. The various firms should also combine establishments, so that they could run the whole process of production of spinning, weaving, bleaching, dyeing and printing under their combined management. This concentration of work

is a characteristic of modern industrial progress. It would enable the manufacturers concerned not only to avoid the expense of transmitting goods from one firm to another, but also strengthen their position in international competition. This tendency is growing in Japan. Many spinners are weavers as well, and in a few cases they are also finishers as mentioned elsewhere; therefore, much of the yarn produced never finds its way into the hands of the middleman, and some manufacturers even export their goods direct. Each department of the industry in England seems to have developed so independently from the others that combination is apparently not an easy task. However, the industry in Japan has so far not developed so much as England. There is great hope of development in the future if the policy of combination is carried out to the fullest extent.

In conclusion, we may say that, although the cotton industry in Japan labours under many disadvantages as compared with other countries, there is still great promise in its future provided that finished goods are made by skilled labour, and that the whole industry is co-ordinated and assisted by the co-operation not alone of spinners and weavers, but of shippers and bankers.

CHAPTER III

OTHER TEXTILE INDUSTRIES

§ I. THE WOOLLEN INDUSTRY

I. General Woollen Fabrics.

Before and during the Great War.

HISTORICALLY speaking, the woollen industry in Japan began before the Meiji era, but at that time its importance was inconsiderable. Since the new era started and up to the present the demand for woollen fabrics has rapidly increased in accordance with the change in the mode of life. The consumption is extending to all classes. The first woollen factory was established under the guidance and supervision of the Government in Tokio in 1876, in order mainly to supply army cloth, on the site of the former establishment of the present Senju Seijusho (Senju Woollen Mills). In 1878 a private factory called Goto Keori Company was formed, but for the following ten years this new enterprise made no progress, the reasons of which were as follows :

- (a) Insufficient technical knowledge and experience which caused unsuccessful returns.
- (b) Lack of capital due to capitalists preferring not to speculate in such a new industry.
- (c) The infant state of the industry rendered it weak to compete against foreign goods, and it was also found very difficult to carry on business under private management.

We can readily understand that the reason the home industry could not be developed, in spite of the Govern-

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ment's aid, was because the home-made goods were altogether inferior to the imported ones in quality, fineness and dyeing. If we take the following figures of the imported goods, we can see that a big amount of foreign goods was imported yearly since early in 1868 :

Years.	Value (Yen).
1868	1,948,121
1872	7,216,539
1877	4,846,358
1882	2,631,847
1887	4,537,827
1888	5,987,852
1889	5,455,232
1890	6,726,124
1891	4,809,362
1892	5,662,887
1893	6,476,645

After an interval of ten years, a woollen company called the Tokio Seiju Co., Ltd., was promoted with a capital of yen 300,000 ; but three years elapsed before the company could produce woollen and flannel clothing. This company, however, continued working at a loss until 1892, which shows in some way how difficult the industry was in its management at this period. Besides this company, another one called the Japanese Flannel Co., Ltd., was also established in 1887, the Tokio Seishoku Co., the Osaka Keori Co. in 1891, the Nippon Keori Co. in 1896, and the Tokio Keori in 1906 ; but they were not successful from a business point of view, and could only carry on by getting special orders and assistance from the military and other Government offices. Needless to say, the industry at this stage could hardly be expected to compete against foreign goods, as the producers were not able to suit the buyer's requirements with their inferior products.

Since 1894 and up to 1905, the industry gradually acquired a sound foundation. Being assisted by the general industrial revival after the Japanese-Chinese War and twenty years' experience, new weaving plants were installed for manufacturing cloth from imported yarns, and later spinning machinery was imported for use on imported tops.

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To make it clear how the industry stood during these years, we cite the financial conditions of the Tokio Seiju Co., which was one of the largest representative companies in this industry at that time.

FINANCIAL CONDITIONS OF THE TOKIO SEIJU Co. (1896-1904)

Years.	Authorized Capital (Yen).	Paid-up Capital (Yen).	Receipts (Yen).	Payments (Yen).	Profits (Yen).
1896	350,000	350,000	209,000	176,000	33,000
1897	1,000,000	740,000	444,000	396,000	48,000
1898	1,000,000	831,000	496,000	443,000	53,000
1899	1,000,000	896,000	521,000	482,000	39,000
1900	1,000,000	935,000	635,000	589,000	46,000
1901	1,000,000	935,000	713,000	768,000	45,000
1902	1,000,000	935,000	880,000	828,000	52,000
1903	1,000,000	1,000,000	1,005,000	971,000	34,000
1904	1,000,000	1,000,000	1,454,000	1,312,000	142,000

Although the table shows the increased yearly income and the gradual expansion of the company's business, the industrial development during the last fifteen years, especially of such a representative company, was rather limited. The simple reason why the development of the industry was not undertaken, in spite of the increased demand for woollen products after the Japanese-Chinese War, was mainly because people preferred imported goods, which were still far superior to home goods. In other words, the Japanese woollen manufacturing industry was not developed satisfactorily enough for purchasers' demand. It is, therefore, to be expected that the quantity of imported goods rapidly increased during these years.

IMPORTS OF WOOLLEN GOODS DURING 1894-1912

Years.	Serges.		Other Woollen Cloths.		Other Cotton Mixed.		Total Value.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
1894-1898	13.0	11.2	215.0	234.8	68.6	35.8	605.0
1899-1903	70.4	60.2	203.0	218.0	230.4	125.0	639.0
1904-1908	179.6	146.4	446.8	558.8	388.4	232.0	1,125.6
1909-1912	298.5	235.0	184.2	214.0	527.7	377.0	961.5

(Quantity = 10,000 yards. Value = 10,000 yen.)

Thus, owing to the invasion of foreign competition the industry made slow progress, and remained in the same condition up to 1904. But on the outbreak of the Japanese-Russian War (1904-1905), the companies enjoyed a war time boom, taking full advantage of the rapid rise of prices and the increased demand for goods, especially for military uses. However, this did not continue long, for the slump came about soon after the war ended. Moreover, a bitter reaction set in in 1908, caused by the sudden drop in prices, which was due not only to the abundant supply of home stocks, but to those accumulated by speculative importation during the war. At this time the Tokio Seiju Co., the Tokio Keori Co. and other leading companies, such as the Nippon Keori Co. and Goto Keori Co., were all in a difficult financial position and worked at great losses.

Thus the woollen industry in Japan, unlike the other new industries, had been in a very unsatisfactory position up to the time of the Great War. It had always been subjected to keen competition from foreign goods. There were also the disadvantages that the industry had to depend entirely upon imported raw material, that it had to import the woollen machinery, and that it had to pay comparatively high wages for workmen, since the industry needed more skilled labour than others did. Owing to these difficulties the companies could not produce goods to compare with imported goods at competitive prices.

After the Great War.

However, the Great War gave an epoch-making opportunity to the industry. It rendered it quite free from foreign competition, and gave a monopoly of the whole home demand to the Japanese woollen manufactures. Exceptional developments have been the result. Not only did the fore-mentioned companies increase their capital from yen 5,000,000 to yen 10,000,000, but many also amalgamated. There were in addition many new woollen companies successfully established. The prominent new companies are as follows :

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Names of Companies.	Established.	Capital (Yen 1,000).
The Tokio Kenmo Kaisha (The Tokio Silk and Woollen Co.)	1916	4,000
The Toyo Keito Kaisha (The Eastern Woollen Yarn Co.)	1916	10,000
The Dai-Nippon Genmo Kaisha (The Great Woollen Co.)	1920	10,000
The Kanmo Keori Kaisha (Manchurian and Mongolian Woollen Co.)	1918	10,000
The Yomo Seisei Kaisha (Woollen Manufacturing Co.)	1919	3,000
The Yomo Boshoku Kaisha (Woollen Weaving Co.)	1918	3,000
The Teikoku Keori Kaisha (Imperial Woollen Textile Co.)	1918	10,000
The Tokio Keori Kaisha (The Tokio Woollen Textile Co.)	1917	11,000

(This last named is the one amalgamated with the three old-established firms, i.e. Tokio Seiju, Toyo Keori and Tokio Keori.)

As is to be expected, the amount of capital invested in the industry increased tremendously. Moreover, the number of workers employed and the number of woollen machines in use reached higher figures every year.

NUMBER OF MACHINES AND WORKERS IN THE WOOLLEN INDUSTRY IN JAPAN

Years.	Machines.		Workers.
	Power.	Hand.	
1915 . . .	7,136	2,997	19,965
1916 . . .	6,854	3,392	18,851
1917 . . .	5,965	4,515	21,623
1918 . . .	6,732	5,028	26,364
1919 . . .	7,085	6,252	27,990
1920 . . .	8,644	5,679	27,109

As to the output of woollen goods, such as delaine, flannel, serges and woollen blankets, which are the chief items, they are showing an increase in production after the War, the total value rising from yen 40,527,000 in 1914 to yen 161,238,000 in 1920, that is, a four times increase on pre-war figures. Although the rapid rise in value was partly due to higher prices, the quantity of output also showed a striking increase.

OUTPUTS OF WOOLLEN GOODS IN JAPAN

Years.	Flannel (1,000 Yds.).	Serges ¹ (1,000 yds.).	Blankets (1,000 Kin).	Other Woollen Fabrics (1,000 Yds.).	Total Value (1,000 Yen).
1905-09 (average)	141·2	87·8	—	1,191·4	7,067·6
1909	78·0	96·0	—	353·0	4,613·0
1910-14 (average)	1,482·0	3,954·4	140·6	1,252·8	19,037·4
1914	3,382·0	9,247·0	345·0	2,023·0	40,527·0
1915	1,249·0	6,442·0	1,352·0	5,901·0	40,284·0
1916	1,627·0	6,171·0	593·0	6,928·0	51,403·0
1917	1,154·0	9,447·0	1,136·0	4,149·0	44,022·0
1918	970·0	12,023·0	1,040·0	7,648·0	85,938·0
1919	3,104·0	26,955·0	1,426·0	17,428·0	129,374·0
1920	2,249·0	10,531·0	1,055·0	6,688·0	161,238·0

As the result of development of the woollen industry, the import of raw wool (except tops) increased proportionately, in spite of the war time export prohibition of raw wool in some countries. The quantity imported was only 8,707,000 kin in 1913, but it jumped all at once to 39,401,000 kin in 1915, and then gradually decreased till 1918, regaining an upward tendency in 1919. Japan purchases raw wool from China, South America, South Africa and Australia. Australian wool is used for the most part for making fine yarns for mousseline de laine. Crossbred wool, which is used for woollen cloth, is also greatly supplied from Australia. Chinese wool, mainly mixed with cotton, goes into the manufacture of blankets, and good quality South African wool for the weft of mousseline de laine. On the contrary, the imports of tops showed a decrease yearly since 1913 up to 1922, which meant progress in combing methods. In fact, Japanese manufacturers established combing machines, owing to the difficulty in importing tops during the War and began to produce tops and yarns directly from raw wool, instead of depending wholly on foreign material as they did before the War. At present there are several companies which carry on all the processes of woollen manufacture from spinning to finishing. However, prior to the Great War the Nippon Keito Boshoku Kaisha was only concerned in yarn spinning, but this branch of industry developed rapidly after the War on account of the sudden

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demand for woollen yarns. As a consequence other companies began to undertake this line of production. The number of spindles increased from 128,000 in 1912 to 315,000 at the end of 1920. The quantity of yarns produced in 1921 was roughly 21,462,000 lb., the value being yen 82,500,000.

IMPORTS OF RAW WOOL AND TOPS

Years.	Raw Wool.		Tops.	
	Quantity (1,000 Kin).	Value (1,000 Yen).	Quantity (1,000 Kin).	Value (1,000 Yen).
1913 . .	8,707	5,221	7,087	10,777
1914 . .	9,477	5,190	6,147	9,594
1915 . .	39,401	24,400	3,887	8,448
1916 . .	30,653	25,059	4,484	6,184
1917 . .	35,303	39,786	4,325	12,327
1918 . .	36,284	49,141	2,548	11,005
1919 . .	38,533	47,567	3,240	13,737
1920 . .	53,351	106,503	2,861	15,126
1921 . .	22,595	19,548	4,137	12,655
1922 . .	50,593	39,621	5,922	15,745
1923 . .	43,331	56,193	8,451	23,818

Furthermore, the development of the industry since pre-war days caused a decrease of imports of woollen goods and encouraged exports of home-made goods to foreign countries, such as China, India, Straits Settlements and Philippines, as the following table shows :

EXPORTS AND IMPORTS OF WOOLLEN FABRICS (Excluding mousseline de laine)

Years.	Exports.		Imports.	
	Quantity (1,000 Kin).	Value (1,000 Yen).	Quantity (1000 Yds).	Value (1,000 Yen).
1913 . .	156	239	14,447	12,445
1914 . .	332	1,010	11,804	10,225
1915 ¹ . .	6,813	16,760	3,671	3,623
1916 . .	3,046	6,690	2,767	5,180
1917 . .	2,547	5,181	3,159	6,219
1918 . .	2,588	6,108	4,596	11,485
1919 . .	2,248	7,728	3,056	12,301

¹ The great increase of 1915 was mainly due to exports of 6,622,000 kin to Russia before the Revolution.

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However, as soon as the War ended the state of the woollen trade was utterly changed; the exports rapidly decreased and, contrarily, the imports increased to more than the pre-war figures.

EXPORTS AND IMPORTS OF WOOLLEN FABRICS (Excluding mousseline de laine)

Years.	Exports.		Imports.	
	Quantity (1,000 Kin).	Value (1,000 Yen).	Quantity (1,000 Kin).	Value. (1000 Yen).
1920 . . .	927	4,592	8,857	31,270
1921 . . .	338	1,697	10,336	31,083
1922 . . .	129	1,070	24,046	49,953
1923 . . .	170	1,299	26,320	46,600

The Present Position.

As the above tables show, the boom which the industry had enjoyed during the War rapidly fell, and the position was quite reversed. Imports of woollen goods increased to more than the pre-war figures and exports decreased rapidly, only retaining a market in the colonies and China. In fact, in the latter half of 1921, the worst time of the economic depression, the woollen companies, both old and new, were in a chaotic condition owing to a drop in prices and absolutely dull demand. What they should have done in order to cope with such a depression was to regulate their production, which was expanded to its utmost capacity. As a matter of fact, the leading companies which belong to the Japanese Woollen Manufacturers' Association of Tokio assembled at this time, and made an agreement for the purpose of reducing their war time production by 50 per cent, according to their respective capacity. In spite of the cut in production, prices were kept down, and the companies remained in the depressed state. Therefore, the companies, whose capital had been increased during the War from three to five times and in some cases nearly ten times the pre-war figures, were in a very precarious state. They not only had to reduce their high war time dividends, but found it very difficult even to carry on business. It should be noted that

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the reduced rate of dividends does not give a true indication of the state of the companies, as the actual profit during and after the depression was far less than the declared dividend would lead one to believe. In order to appear prosperous the companies kept the dividends high by adding to them from the enormous reserve accumulated during the boom years.

After a few bankruptcies, amalgamations took place, and a more normal state of things began to appear about the beginning of 1922. In spite of the fact that the amount of capital invested in the industry decreased during the period of depression, the output of woollen goods has increased. According to statistics issued by the Woollen Association, the quantities of woollen cloths produced in Japan in recent years are as follows :

Years.	Woollen Cloth (Yards).	Serge (Yards).	Mousseline (Yards).
1912	. 6,378,000 ¹	—	54,756,000
1916	. 13,099,000 ¹	—	43,548,000
1920	. 6,687,800	10,531,000	53,264,500
1921	. 6,211,300	14,142,500	72,427,900
1922	.. 6,175,700	24,540,100	89,102,900

From the points of view of technical organization, the use of machinery and further adoption of new appliances, the industry has improved tremendously since the War. However, we still have to admit that the present stage of development is not yet satisfactory, because the industry is still unable not only to supply higher quality goods, but also to meet the whole home demand for lower class goods, imports of which have been increasing year by year. It is well known that those goods produced in Japan are generally of very poor quality, and that they can find a sale in the home market only by the aid of the protective import duties on foreign goods. Despite the high barrier on goods of foreign origin, there is a tendency for woollen imports to increase, especially those of good quality. Japanese

¹ = Woollen cloth and serge.

manufacturers cannot hope to prevent the importation of foreign fabrics until they become more skilful, and are able to lower the cost of production.

It was at one time believed that the technical advance in the Japanese woollen industry made during the War was sufficient to enable it to withstand foreign competition. However, this belief has been found to be without foundation. Wages are now two or three times higher than the pre-war level, yet it is impossible that the workers' efficiency could have increased proportionately. As a matter of fact, the companies are obliged to retain a few foreign experts at a high salary owing to the Japanese workers' inefficiency. While the other important industries have more or less secured a monopoly of the home market, the woollen industry has not even yet been able to maintain itself supreme over foreign competitors in that sphere. In fact, the industry at the present stage is only a little more than a supplementary enterprise supplying the deficiency which foreign competitors overlook. It is, therefore, obvious that the industry needs much improvement, in order to be on a level with the industry of the leading countries such as Great Britain and the United States.

2. *Mousseline de laine.*

The most important product of the woollen industry in Japan is mousseline de laine, the production of which has developed almost independently, owing to the fact that this fabric is particularly suited to the Japanese taste and climate. It is necessary to outline the course of its development apart from the Japanese woollen industry in general.

Mousseline began to be used extensively as soon as it was imported from Western countries about fifty years ago. As shown below, the import, which was only 347,000 yards in 1868, jumped to 5,053,000 in the year 1873. Since then the demand for the fabric increased year by year, imports reaching the record figure of 37,635,000 yards in 1896. In spite of the marked increase in its use, Japan had at first to depend entirely upon foreign goods, as no Japanese factories could manufacture the popular fabric, the reason

being that the Japanese had no knowledge of manufacturing woollen goods at that time.

IMPORT OF MOUSSELINE DURING THE EARLY STAGE

Years.	Quantity (Yards).	Value (Yen).
1868 . . .	347,000	73,000
1873 . . .	5,054,000	1,076,000
1878 . . .	13,626,000	2,693,000
1883 . . .	11,297,000	1,618,000
1888 . . .	16,047,000	2,364,000
1893 . . .	15,424,000	2,305,000
1896 . . .	37,635,000	6,498,000

Thus, since the appearance of the fabric nearly thirty years elapsed, during which the market of this particular commodity in Japan was entirely monopolized by foreign goods. However, at the time of the boom directly after the Japanese-Chinese War, two firms were established solely for the purpose of manufacturing mousseline; and this was, needless to say, the first attempt of Japanese firms in this line. They were the Tokio Mousseline Co. and the Osaka Mousseline Co., both of which were formed in 1896. A year later two more firms were successively established, one was the Nippon Keori^a Co., whose production was of general woollen goods including mousseline, the other the Matsui Mousseline Co., which was under private management at the start, but became a limited company in 1907.

It must be noted, however, that at first they were not successful; as they could not compete with European goods they were in a sorry plight, and no dividends were declared for a long period. Although the industry was so unpromising at first, it was far in advance as compared to the other woollen manufacturing branches, because the fabric was much more in demand than any other, owing to its suitability to people's taste and for native style of garments.

It was not until the outbreak of the war with Russia that the industry developed to the extent that home consumption was almost entirely supplied by home production. After the war the demand for mousseline rapidly increased, and, moreover, its price rose, yielding the handsome returns

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so long expected. The years between 1906-1908 were the first prosperous years which the industry ever had. Encouraged by increased profits and rising demand, not only did the old-established firms extend their business, but new companies were successively promoted, and other woollen factories began to engage in this line of production. As the industry progressed, the output¹ of mousseline showed a great increase, and the import² diminished year by year. In fact, after the Japanese-Russian War the increase of mousseline production showed the remarkable figure of 16,796,000 yards in 1905 with a jump to 54,756,000 yards in 1912. Moreover, mousseline began to be exported in 1905, and since then export has steadily grown in volume.

In the history of this industry, the year 1905 can be called an epoch-making one. At a time when other woollen goods could not approach the high standard of foreign makes,

¹ OUTPUT OF MOUSSELINE DE LAINE (1905-1912)

Years.	Quantity (Yards).	Value (Yen).
1905	16,796,000	3,845,000
1906	22,426,000	5,659,000
1907	23,775,000	6,421,000
1908	27,444,000	6,510,000
1909	37,878,000	11,117,000
1910	43,953,000	13,429,000
1911	49,382,000	14,400,000
1912	54,756,000	18,360,000

² IMPORT AND EXPORT OF MOUSSELINE

Years.	Import.		Export.	
	Quantity. (1,000 Yards).	Value. (1,000 Yen).	Quantity. (1,000 Yards).	Value. (1,000 Yen).
1899-1903 (average)	16,421.8	4,599.8	—	—
1904	6,260.0	1,818.0	—	—
1905	11,363.0	3,066.0	97	39
1906	8,926.0	2,671.0	137	58
1907	5,879.0	1,871.0	238	94
1908	7,516.0	2,189.0	355	122
1909	7,532.0	1,988.0	528	170
1910	3,365.0	890.0	668	220
1911	3,406.0	963.0	448	156
1912	340.0	99.0	688	228

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Japanese mousseline gained a footing in foreign countries, thereby proving the ability of that industry to produce a quality of mousseline equal to any produced elsewhere.

However, from 1908 up to 1913 the industry was affected by the post-war depression (the Japanese-Russian War) and was in just the same financial difficulties as all other industries were, owing to over-production and the drop in prices, which was more or less to be expected after a war boom.

On the outbreak of the Great War, business revived and activity increased; especially were exports considerably increased to a degree never before experienced. But the gross output of the mousseline industry did not show an increase in proportion to war time briskness, for the reasons that the importation of machinery was difficult, and that the supply of raw material to meet the great demand was insufficient, owing to the export prohibition of wool tops in England, which is the chief source of the Japanese raw material.

OUTPUT OF MOUSSELINE DURING AND AFTER THE GREAT WAR

Years.	Quantity (Yards).	Value (Yen).
1913 . . .	69,585,000	19,430,000
1914 . . .	50,347,000	14,597,000
1915 . . .	60,084,000	18,441,000
1916 . . .	43,548,000	19,310,000
1917 . . .	45,812,000	19,187,000
1918 . . .	45,830,000	32,880,000
1919 . . .	41,563,000	34,974,000
1920 . . .	53,265,000	52,009,000
1921 . . .	72,427,000	—
1922 . . .	89,102,000	—

Despite the standstill of the output during the War, the demand kept increasing at home as well as in foreign markets, consequently the price of mousseline continued its upward tendency right through the whole of the War, giving, needless to say, a most profitable opportunity to the manufacturers.

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IMPORT AND EXPORT OF MOUSSELINE DURING AND AFTER
THE GREAT WAR

Years.	Import.		Export.	
	Quantity (Yards).	Value (Yen).	Quantity (Yards).	Value (Yen).
1913	159,000	47,000	760,000	132,000
1914	90,000	26,000	584,000	187,000
1915	123,000	34,000	4,607,000	1,349,000
1916	1,000	25,000	7,086,000	2,718,000
1917	—	—	3,748,000	2,205,000
1918	—	—	7,004,000	5,545,000
1919	—	—	3,817,000	3,394,000
1920	—	—	2,121,000	2,840,000
1921	—	—	480,000	563,000
1922	—	—	795,000	747,000
1923	—	—	796,000	783,000

After the Great War the mousseline industry, like all other industries, was in a depressed state. Prices were lowered and stocks were overflowing. However, as soon as the intermediate boom of 1921 came, the industry was set on its feet again without having experienced the severe depression which gave all other branches of the woollen industry an entire set-back. The reason the mousseline industry recovered sooner was because it was sounder than the others, and because it was free from foreign competition. This also was in its favour that the demand for mousseline was steadier and greater than for any other kind of woollen goods, owing to its suitability for dress in the Japanese climate.

§ 2. THE HEMP AND FLAX INDUSTRY

General Description.

The hemp industry had its origin in Japan as far back as the silk industry, and was carried on practically in all parts of the country. Even in olden times the use of hemp goods prevailed among the rich and poor. It should be noted that fabrics known as "Jofu" were made originally of Chinese hemp, the fibres of which, compared with hemp,

are soft and rich in lustre. Those produced in the Nigata-ken and Okinawa-ken have a high reputation at the present time.

In olden times, however, production in this industry, either in hemp cultivation or in the weaving process, could not be described as other than primitive, the general system of manufacturing being domestic until about thirty-eight years ago. Even after the Meiji Restoration (1868) the industry was still working under the old cottage system, whilst other industries began to use machinery and modern methods.

The change from family work to factory system was first begun by the establishment of a hemp company in 1886, named the Omi Asaito Kaisha (the Omi Hemp Yarn Co.), with a capital of yen 200,000. This company borrowed yen 85,000 from the Government, with which it established the first hemp spinning mill, equipped it with French machines, and commenced work at the end of that year. After a short period, it was found useless to carry on the work unless some alteration took place in the processes of manufacture, as the machines were not made for the use of hemp, but of flax; and the company was prepared to manufacture only from hemp yarns, canvas, mosquito nets and codes.

The same thing was experienced by the Shimotuke Seima Kaisha (the Shimotuke Hemp Manufacturing Co.), which was established one year later than the former. These two companies, however, continued the work of importing jute from China and India. In the meantime, another company called the Hokkai Seima Kaisha (the Hokkai Hemp Manufacturing Co.) was formed in 1889 with capital of yen 800,000. On the formation of this company the Hokkaido Local Government provided great assistance, and guaranteed a 5 per cent dividend for six years. Fortunately this company's scheme for flax cultivation proved very successful, unlike the other two attempts. The plantations were expanded yearly in area, and later were able to supply raw material to the other companies. In fact, the Hokkai Seima Kaisha can be looked upon as the first establishment of Japanese flax cultivation and manufacture.

Thus, although these firms were at first in a more or less unsatisfactory condition, on the outbreak of the Japanese-Chinese War a great demand for manufactures of this industry having arisen for military purposes, their difficulties were temporarily removed. Moreover, each company increased its capital to cope with the war time boom; the Omi Asaito Kaisha raised its original capital of yen 200,000 to yen 600,000, the Hokkai Seima Kaisha from yen 800,000 to yen 1,600,000, and the Shimotuke Seima Kaisha from yen 200,000 to yen 1,000,000. At the same time a new company, the Osaka Asaito Kaisha (the Osaka Hemp Manufacturing Co.), was established with a capital of yen 2,000,000. As a result of the increase of capital and the expansion of production, stagnation of business, a drop in prices and keen competition from foreign goods ensued as soon as the usual post-war depression came, together with reduced military demands. In order to dispose of their over-production of goods the companies had to undercut one-another, and the desperate competition which ensued wellnigh brought them to the verge of bankruptcy. It was eventually found very unwise to keep up this cut-throat competition among home producers in such critical circumstances; and in order to save themselves from the depression three companies came to a mutual understanding, and agreed to establish a co-operative sale system, which was carried into practice in 1902. The main purposes of the system were to provide financial facilities, to regulate output to a certain limit according to each company's productive power, and also to dispose of old stocks and new products at regulated prices. This system was so successful that these three companies held a conference regarding future amalgamation, and it was most satisfactorily carried out in July of 1903, when a new company called the Nippon Seima Kaisha was formed combining the three with a capital of yen 2,000,000.

The amalgamation of the three companies stopped undesirable competition, and brought unanimity to the industry and a prosperous time seemed assured at last. Shortly after this a second opportunity was given to the

industry by the outbreak of the Japanese-Russian War, during which the one remaining company, the Hokkai Seima Kaisha, and the new combine experienced a boom as was the case in the former war. However, during the usual post-war depression they were so badly hit that they had to agree to amalgamation. Without any difficulty an agreement was come to and signed by the companies by which the Teikoku Seima Kaisha (Imperial Hemp Manufacturing Co.) was established in 1907. It then became the only hemp company in Japan. After this the industry was practically controlled by this one concern. But no great improvement in production not only in regard to amount but in regard to the variety and quality of goods was noticeable. The home market only was supplied by it, and even then there was always foreign competition to be reckoned with.

Before the Great War broke out two new companies were formed, one was the Nippon Asaito Kaisha, the other the Nippon Seima Kaisha (new company), making three in all, counting the Teikoku Seima Kaisha. These three began to compete strongly; but fortunately being favoured by the unprecedented boom which the Great War created, they enjoyed long profitable years, expanding their market not only at home, but also to foreign countries which had never before been customers for Japanese goods. Throughout Europe a great change in the industry occurred soon after the War, owing to a shortage of raw material caused mainly by the collapse of European Russian flax cultivation,¹ which had been the source of raw material to European hemp manufacturing countries, such as France, Belgium, Germany and England. It is fairly obvious that the industry in these countries was terribly affected by the lack of Russian material. Consequently, production of flax manufactures at this time was greatly reduced, thereby benefiting the industry in Japan very much.

¹ Russia was, and still is, a great flax producing country, the area of which farmed was about 3,887,260 acres before the War, but decreased since the War right down to 777,450 acres in 1919 and 780,000 in 1920. Russia still holds, however, 50 per cent of the total flax producing land in the world.

AREA OF FLAX CULTIVATION (ACRE)

Countries.	1913.	1919.	1920.
Russia	3,887,000	777,450	780,000
Ireland	46,000	112,000	127,000
Belgium	39,000*	87,000	150,000
Japan	30,000	70,000	60,000
France	50,000	35,000	91,000
Holland	29,000	25,000	62,000
Canada	5,000	22,000	31,000
British East Africa	1,000	5,000	20,000
Germany	83,000	—	172,000

Since 1914 the industry in Japan has made rapid development in all lines of hemp and flax manufacture, which can be seen from the following table :

OUTPUT AND EXPORTS OF HEMP AND FLAX AND JUTE GOODS

Years.	Exports.					
	Output of Hemp. Flax and Jute Yarns (1,000 Kin.)	Linen Yarns (1,000 Kin.)	Thread and Twines of Hemp, Jute and Flax (1,000 Kin.)	Cordages and Ropes of Hemp and Jute (1,000 Kin.)	Tissue of Flax and Hemp (including Cotton Mixture) Gunny Bags (Piece). (1,000 Yen).	
1905	812	—	—	554	—	—
1908	905	—	—	586	—	—
1912	913	—	—	315	1,737	—
1913	1,211	—	—	266	3,385	—
1914	1,559	—	—	349	2,708	—
1915	1,880	—	—	792	2,018	—
1916	2,053	—	—	1,355	1,170	—
1917	4,216	262	1,274	1,205	863	1,769
1918	4,381	818	1,631	2,067	4,066	3,554
1919	3,834	1,234	3,974	1,216	10,967	4,290
1920	2,680	1,322	1,612	1,010	4,402	1,746

As seen above, the output of hemp and flax yarns was increasing rapidly, especially after 1914. But we must also emphasize that the yarns used for military goods and unrefined stuffs for mosquito nets and matting and all common hemp and flax fabrics were gradually improved, and were used for the manufacture of refined grade of goods, such as handkerchiefs, napkins, sheetings, linens, etc. The result obtained through technical improvement of the industry was that markets were found not only at home but in foreign countries as well. Exports of the manufactured goods showed a remarkable increase as compared with pre-

war figures, although a slight decrease was shown after the post-war depression. The most important thing is that the industry, which used to be a subordinate one, at the mercy of foreign competition before 1913, has now so matured that it not only has driven out foreign goods, but has been exporting its product to foreign countries. In consequence of this and being further encouraged by the prospective state of the industry, many new companies have been established, the principal ones being the Hokkaido Ama Kogyo Kaisha (the Hokkaido Flax Industrial Co.), with a capital of yen 2,000,000, and the Toyo Seisen Kaisha (the Eastern Hemp Manufacturing Co.), the capital of which was yen 1,000,000.

Raw Material.

Amongst fibre industries the cotton and woollen industries have to depend entirely upon foreign supply for raw materials. The hemp and flax industry, on the contrary, are quite independent, being sufficiently supplied by home-grown material just as the silk industry is. This is a good and sufficient reason for the recent progress of the industry. Flax cultivation in Japan was first tried in 1889 in Hokkaido, and was so successful that the area under cultivation increased yearly from 25 cho in 1889 to 4200 cho in 1920, and output increased accordingly from 3,500,000 kan in 1913 to 17,550,000 kan in 1920.

AREA AND OUTPUT OF FLAX IN JAPAN

Years.	Area under Cultivation (Cho).	Output (10,000 Kan).	Value (10,000 Yen).
1903-1907 (average)	5,503	366	49
1908-1912	—	355	36
” (average)	5,132	350	62
1913	7,592	770	91
1914	11,306	864	95
1915	13,665	1,258	147
1916	14,709	1,227	352
1917	19,677	1,730	586
1918	34,865	1,529	363
1919	37,929	1,755	480
1920	42,111	—	—

(NOTE.—Cho=2.45 acres.)

Present State of the Industry.

To realize the recent expansion of the industry, one has only to observe how spindles and mills increased in number and how the amount of capital invested has increased. The number of spindles, which was only 26,890 in 1913, increased to about 62,000 in 1921, and the number of mills from 500 to 1,490 in the same time. The amount of paid-up capital, which was yen 6,400,000 in 1913, jumped to yen 65,000,000 in 1921, and the increase of capital and productive capacity resulted in more workers being employed.

	1913.	1921.
Number of workers (including those of weaving factories)	3,995	10,648
Number of spindles	26,890	62,100
Number of mills	500	1,490
Paid-up capital	Yen 6,400,000	Yen 65,000,000

Thus, the hemp and flax industry of Japan has made great strides during the years 1913-1921. The plentiful supply of home-grown raw material, the high tariff on foreign goods and the outbreak of the Great War were the great causes of the advance. The usual depression set in soon after the War. Although the industry did not suffer quite so much as other industries, the companies were compelled to reduce output by 50 per cent, owing to decreased demands for home consumption as well as from foreign markets. In July, 1922, they again agreed to work on the co-operative sale system with a view to carrying on in the depressed circumstances.

The present situation, however, is not very promising. The restoration of the industry in European countries and the probability of strong foreign competition on the hemp market will naturally mean a lot to the Japanese hemp industry. As a matter of fact, the export of hemp and flax manufactures in recent years shows a steady tendency to decrease. It is now quite important and necessary, in order to maintain progress in the industry, for the companies to hold further research into the making of more refined goods, especially those which were supplied by foreign competitors,

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and furthermore to extend their use so as to supply the needs now supplied by cotton goods.

RAPID DECREASE OF EXPORTS OF HEMP, FLAX AND JUTE GOODS AFTER THE GREAT WAR

Articles.	1919.	1920.	1921.	1922.	1923.
Linen yarn :					
Value, yen 1,000	2,124	2,939	16	—	2
Quantity, 1,000 kin	1,234	1,322	6.8	—	1.4
Threads and twines of hemp, jute and flax :					
Value, yen 1,000	2,278	1,225	959	637	655
Quantity, 1,000 kin	3,974	1,612	1,817	1,345	1,725
Cordages and ropes of hemp and jute :					
Value, yen 1,000	582	504	392	428	225
Quantity, 1,000 kin	1,216	1,010	884.8	970	587
Gunny bags :					
Value, yen 1,000	3,613	1,683	528	1,160	731
Quantity, 1,000 pieces	10,967	4,402	2,573	6,893	3,942
Tissue of flax and hemp, including cotton mixture :					
Value, yen 1,000	4,290	1,746	194	255	143

§ 3. ARTIFICIAL SILK INDUSTRY

General Development of Artificial Silk all over the World.

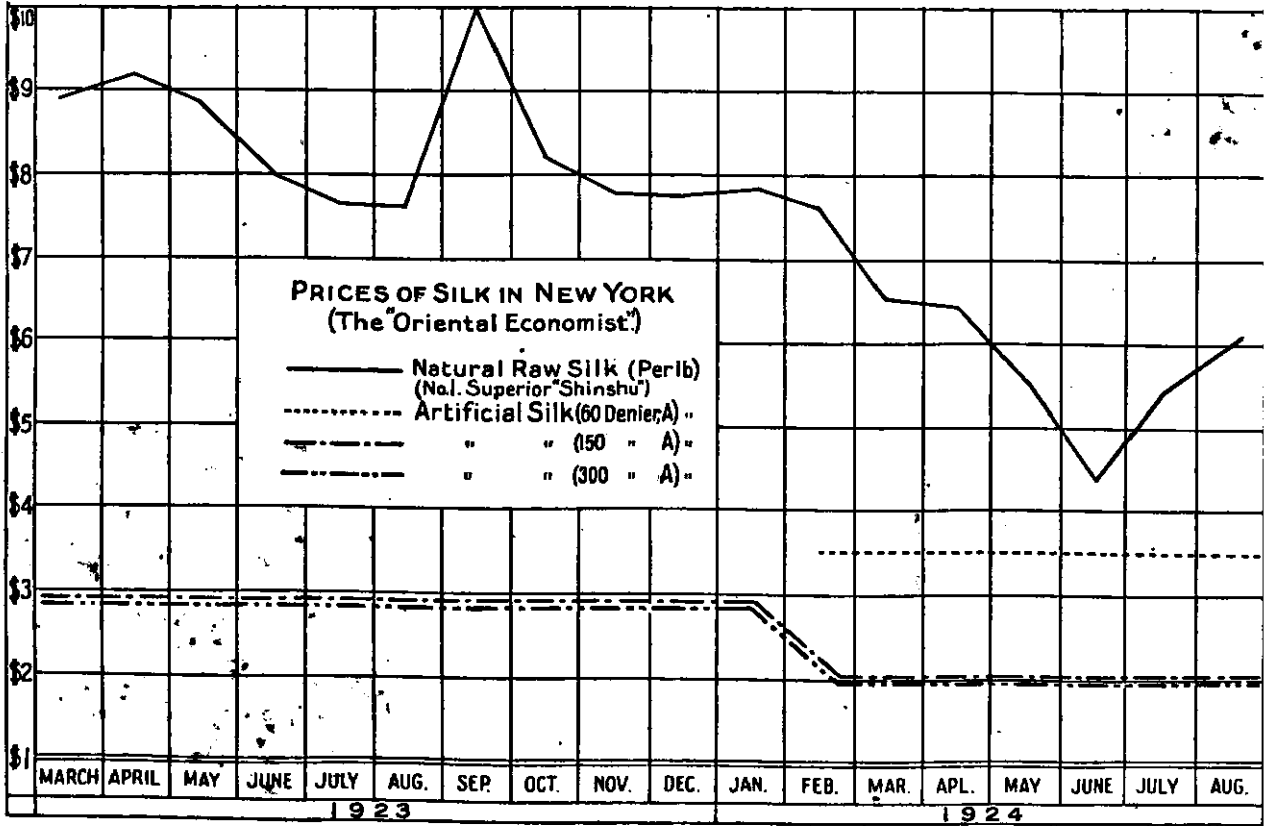
Much attention has lately been focussed on the rapid expansion of the artificial silk industry. Although barely a quarter of a century has elapsed since the industry was established, and it was not until two or three years before the Great War that it attained commercial success, the world's annual production of the new fibre has increased from 25,000,000 lbs. in 1912 to 100,105,000 lbs. in 1923. According to the *New York Journal of Commerce*, an estimate of the world's output in 1925 is quoted as 154,300,000 lbs., and capacity of production of each country as follows :

Countries.	Estimated Output (lbs.).
United States of America	50,000,000
Italy	28,000,000
Germany	20,000,000
Great Britain	14,000,000
France	14,000,000
Belgium	9,000,000
Holland	7,000,000
Switzerland	6,000,000
Austria	2,200,000

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Countries.	Estimated Output (lbs.)
Czechoslovakia	1,600,000
Poland	1,200,000
Hungary	1,000,000
Spain	300,000
Total	154,300,000

As seen above, Italy and Germany rank in front of Great Britain, whereas formerly they came after Great Britain. Putting aside the question of the accuracy of the table, it is fairly obvious that these countries were eagerly expanding this industry in accordance with the enormous increase of demand. The use of the new fibre is spreading fast all over the world, and it is becoming more popular than ever, as a result of the remarkable improvements in respect of fineness of appearance, strength in water, tension and durability which have been attained of late. Consequently, artificial silk is now used not only as a substitute for natural silk and as weft or filling on warps of cotton and wool, such as socks, stockings, shirts, ties and women's underwear; but more especially for knitted fabrics. Although the use in the weaving industry has not been as satisfactory as in the knitting section, it is confidently hoped from the results which scientists and research workers have attained up to the present, that the new fibre will be so improved before long that it can be used in the manufacture of woven cloth. Moreover, should the new fibre be brought to an entirely satisfactory state the demand for natural silk will be greatly lessened, and the term "artificial silk" denoting the fibre, which was originally invented as a substitute for natural silk, will no longer be suitable. Again, the large output of artificial silk and the improved methods of production give it a wider adaptability as an article unique in itself and distinct from any of the older textiles. Its low cost, which is not a half of the cost of natural raw silk, and its improved appearance and strength, enable it to compete successfully not only with raw silk, but also with cotton and wool. It is, therefore, generally believed that artificial silk will doubtless become a staple article just as the older textiles have.



Comparison with Natural Silk.

Of the advantages which artificial silk has over natural silk, stability of price is the most important thing, apart from its great asset of cheapness.

Take, for instance, the recent wholesale price of both kinds of silk in the New York market : artificial silk was quoted at about half the price of natural silk, making the former \$3.40 per lb., while the latter (a representative Japanese raw silk) \$6.17 per lb. in the American market. According to the chart given below, which shows the price fluctuation of both silks for the last year and a half, apart from the tremendous rise in September, 1923, owing to the great earthquake, natural silk showed vast ups and downs in that short period, while artificial silk was almost on a horizontal level throughout the period and from the reduction in February, 1924. Doubtless this is the great asset of the new fibre. Not only weavers, but also general consumers can rely on it to maintain a uniform price.

Artificial Silk in Japan.

The first company in Japan to produce artificial silk was the Toko Kabushiki Kaisha (The Eastern Industrial Co., Ltd.), and it was established in 1914 under the Viscose system. Since then several new companies whose names are given below were promoted during the high tide of the war boom.

NEWLY ESTABLISHED ARTIFICIAL SILK COMPANIES

Names.	Established.
Nippon Jinzo Kenshi Kabushiki Kaisha (Japan Artificial Silk Co., Ltd.)	1917
Asahi Jinzo Kenshi Kabushiki Kaisha (Rising Sun Artificial Silk Co., Ltd.)	1918
Teikoku Jinzo Kenshi Kabushiki Kaisha (Imperial Artificial Silk Co., Ltd.)	1918
Kawagoe Jinzo Kenshi Kabushiki Kaisha (Kawagoe Artificial Silk Co., Ltd.)	1919
Kiryu Jinzo Kenshi Kabushiki Kaisha (Kiryu Artificial Silk Co., Ltd.)	1921
Tokio Jinzo Kenshi Kabushiki Kaisha (Tokio Artificial Silk Co., Ltd.)	1923

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However, the new enterprises did not prove successful, and most of them with the exception of the Imperial Artificial Silk Co. and Kawagoe Artificial Silk Co. were closed during the post-war financial depression. Their failure was due, not only to the rapid fall in price through the panic, but mainly to their technical inferiority and unsatisfactory products.

In spite of such depressing circumstances, the Imperial Artificial Silk Co. has been engaged on the improvement of the industry, and recently made great extensions to its factories and also amalgamated with the Eastern Industrial Co., which is one of the oldest concerns in this industry. In fact, the production of the company is roughly 90 per cent of the whole output of the new fibre in Japan. The total output was 580,000 lbs. in 1923; or more than twice the amount produced in 1922—that is, 238,000 lbs. The output of 1924 was estimated at 1,200,000 lbs., which was, however, only 40 per cent of the total consumption in Japan. Naturally, the value of the consumption of the new fibre increased *pari passu*, reaching yen 1,800,000 in 1922 and yen 5,500,000 in 1923.

The use of the fibre has thus increased, and it has gained great popularity in Japan. Although the industry has just attained such satisfactory progress, its output is not yet able to satisfy the great demand for the fibre. Therefore, the import¹ of foreign artificial silk has greatly increased, despite the high tariff, which was yen 87·90 per 100 kin.

¹ IMPORT OF ARTIFICIAL SILK

Years.	Value (Yen).	Quantity (Kin).
1912	317,337	122,706
1913	320,014	128,768
1914	266,976	132,822
1915	298,393	137,076
1916	145,192	31,782
1917	705,815	100,176
1918	390,751	58,399
1919	599,260	57,361
1920	563,062	60,459
1921	463,310	104,348
1922	930,644	169,805
1923	3,324,784	762,583

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Regarding the quality of artificial silk made in Japan, it has been so improved that it is no longer inferior to that of English make, whilst in respect of lustre and tensile strength it is superior to Italian make. The most important and noticeable thing is the comparatively cheap cost of production, which is naturally a great asset to this industry in competing with foreign products. The low cost of labour specially and the fact that cost of material holds a relatively low percentage of the total cost in Japan are considered to be advantages which assure the future development of the industry.

In order to describe the present state of the industry it is as well to survey the business state of the Imperial Artificial Silk Co., as this company is not only the strongest concern in the industry, but also the biggest producer (90 per cent of the total output) in Japan. For the seven years since the company was established in 1918, the business has been a success¹ in spite of the fact that artificial silk making is a new industry needing special elaborate technical knowledge and that nearly all the other companies engaged in the industry have failed.

Encouraged by this success, the company has decided to expand its business on a greater scale, and two factories are now under construction. The company will then have four factories working on the Viscose system, with an estimated productive capacity of about 5000 lbs. a day. At the same time the company has decided to increase its capital to yen 4,000,000 for its expansion. It is the company's firm opinion that its own products are no longer inferior to foreign artificial silk.

¹ PROFITS OF THE IMPERIAL ARTIFICIAL SILK CO.
SINCE 1918

Years.	Profits (Yen).
1918 (last half)	2,587
1919	68,240
1920	62,481
1921	3,717
1922	36,852
1923	451,534
1924 (first half)	214,274

(Capital of the company is yen 1,000,000, and rate of dividend was 12 per cent in 1924)

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Thus, the industry in Japan has developed from the experimental stage to the profitable, and its future progress is believed to be assured. However, the output of artificial silk is still so small that it is insufficient to meet the home demand, and, therefore, the industry is not yet recognized as likely to be a very strong competitor in international trade in the future.

CHAPTER IV

MINING INDUSTRIES

MINERAL resources in Japan are very poor. Copper and coal, which are the chief ones, do not, in the opinion of most people, show very promising signs of future greatness. In this Part we will describe these main products. In addition to them iron and steel and mineral oil are the chief subjects to be mentioned amongst the present mineral industries.

§ I. COPPER MINING

Decline of Copper Mines.

Up to 1877 the copper industry held the most important and largest position amongst the mining industries of Japan, but since then the coal mining industry has gradually taken the lead and superseded the former in importance. The copper industry, however, developed remarkably well in producing raw copper before the Great War, and experienced brisk business during the War just as all other industries did. At the close of the War the situation of the industry totally altered. Japan, who had been the second largest copper exporting country before the War, suddenly became an importing country. Another change equally striking was that at the same time Japan began to manufacture finished goods, raw copper being her only line of production up till then. After the War the import of copper, as the figures on page 176 testify, showed a steadily increasing figure and the export showed a contrary tendency.

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PRODUCTION AND CONSUMPTION OF RAW COPPER IN JAPAN

Years.	Production (1,000 Kan).	Consumption (Ton).
1914 . . .	18,790	32,045
1915 . . .	20,110	27,325
1916 . . .	28,836	59,595
1917 . . .	28,810	63,221
1918 . . .	24,091	65,447
1919 . . .	20,918	65,753
1920 . . .	18,077	91,645
1921 . . .	14,655	75,680
1922 . . .	14,433	—
1923 . . .	15,825	—

The chief reasons for the above adverse tendency were first a marked decrease of production, and, secondly, an increase of home consumption. For instance, although production in 1917 showed a great increase compared with that of 1914, it has been decreasing ever since, and was down to 15,825,000 kan in 1923, or 2,965,000 kan less than the pre-war figure. Despite this, home consumption since 1918 has increased more than twice compared with that of 1914. Therefore, it is only too obvious that the exports of copper have greatly decreased and the imports have contrarily increased.

IMPORTS AND EXPORTS OF COPPER

Years.	Exports (1,000 Kin).				Imports (1,000 Kin).		
	Copper Ore.	Ingots.	Plates.	Wire.	Ingots.	Plates.	Others.
1903-07	9,439	45,018	2,077	196	1,327	381	—
1908-12	9,890	60,303	3,825	367	185	12	—
1913	—	70,227	535	378	193	—	446
1914	—	73,540	2,499	505	53	—	264
1915	—	95,684	2,734	278	578	—	60
1916	—	98,949	1,256	4,191	4,198	—	989
1917	—	120,322	1,623	5,804	8,567	—	708
1918	—	53,408	2,463	5,712	1,310	—	158
1919	—	32,406	4,693	1,988	46,465	—	47
1920	—	8,733	4,876	4,633	38,272	—	56
1921	—	15,163	1,315	1,241	21,665	—	415
1922	—	691	662	1,115	37,258	—	1,775
1923	—	601	937	1,426	9,928	—	419

The decrease in the output of copper is due mainly to the rise in the cost of production, especially the rise in the cost of labour, and not as is generally imagined to deficiency of copper resources or to inefficient mining organization. However,

there seems to be no doubt that output will increase if the cost of production is substantially lowered. At present this difficulty does not allow firms to work to their full capacity profitably. So far as the present state of the copper industry in the world is concerned, a rise of copper prices seems very remote; therefore, the industry in Japan will remain in an unfavourable state unless the cost of production is lowered considerably.

RISE OF COST OF PRODUCTION IN COPPER MINING
(From the *Oriental Economist*)

	1914.	1916.	1917.	1919.	1920.	1921.
Wage	100	130	180	276	338	265
Salary	100	110	133	212	257	292
Other costs	100	123	147	178	236	210
Total	100	124	156	208	266	229

PROPORTION OF EACH ITEM OF COST OF PRODUCTION
(From the *Oriental Economist*)

	1914.	1916.	1917.	1919.	1920.	1921.
Wage	28.9	30.0	33.4	38.4	36.7	33.3
Salary	3.7	3.3	3.2	3.8	3.6	4.8
Other costs	67.4	66.7	63.4	57.8	59.7	61.9
Total	100	100	100	100	100	100

It is sometimes thought that higher wages give higher purchasing power. However, this is not noticeably true in the copper industry. It is notorious that the workers' conditions are not satisfactory even though the wages are higher, because at present the cost of living in Japan is increasing more swiftly than the advance of wages. In order to earn more, the workers are forced to work longer hours and more days despite increased wages. They used to work on an average twenty days a month in 1914; however, the number of working days increased every year since the Great War, and they worked practically a full month¹ in 1921.

¹ AVERAGE WORKING DAYS A MONTH OF COPPER MINERS.

	Days.		Days.
1914	20.0	1918	22.5
1915	20.8	1919	24.1
1916	20.6	1920	25.1
1917	24.9	1921	28.1

The Big Mine Owners and High Tariff.

Heretofore, the copper industry in Japan has been in the hands of several big industrialists,¹ who, having a number of important copper² mines in their possession, practically control the other smaller mines.

The decrease of copper output in Japan during the last few years, as shown by the foregoing table, is due mainly to the falling off in production in the smaller mines rather than in the representative ones, although the downward tendency is of a general nature. Yet if we now take the index number of the output of the above four groups of mines (1), (2), (3) and other smaller mines (4) separately, it is clearly seen that the cause of the decrease is solely that of the decay of the last.

¹ COPPER INDUSTRIALISTS IN JAPAN

Names of Industrialists.	Mines under their Control.
Kuhara and Co.	{ Hidate copper mines. Sagaseki "
Furukawa and Co.	{ Ashio " Mizushima "
Fujita and Co.	{ Kosaka " Bessi "
Mitsubishi and Co.	{ Osarusawa " Ikuno "

Amongst the above mines, Ashio, Hidate, Bessi and Kosaka mines are the four largest ones, which yield about 64 per cent copper a year.

² COPPER MINES AND THEIR OUTPUT
(1,000 Kin)

Mines.	1913.	1915.	1917.	1919.	1921.
1. { Ashio	57,736	68,266	89,575	79,063	57,507
Hidate					
Bessi					
Kosaka					
Kosaka	52.1%	54.3%	49.8%	60.5%	63.8%
2. { Osarusawa	11,530	14,134	17,021	14,952	13,416
Ikuno					
Okoya					
Abezo	10.4%	11.2%	9.5%	11.4%	14.9%
3. { Sagaseki	—	3,204	20,328	18,677	13,951
Naojima					
Mizushima					
Other	41,569	40,090	56,138	18,046	6,280
4. { smaller	37.5%	32%	29.4%	13.8%	6.3%
mines					
Total	110,835	125,692	180,063	130,738	90,154

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INDEX NUMBER OF COPPER OUTPUT ACCORDING TO THE MINES

Years.	Group 1.	Group 2.	Group 3.	Group 4.	Total.
1913 . . .	100	100	100	100	100
1914 . . .	101	107	103	112	106
1915 . . .	118	122	123	98	113
1916 . . .	152	148	161	135	151
1917 . . .	155	148	183	128	162
1918 . . .	143	129	173	75	135
1919 . . .	137	130	163	43	118
1920 . . .	116	134	146	29	102
1921 . . .	100	116	121	15	81

The decrease of output in the last group is due not only to the fact that the increased cost of production has put the smaller mines in a greater difficulty than the larger ones, but also to the fact that these smaller ones expanded their works without solid financial foundation during the War, owing to the rapid rise of copper price. Therefore, on the setting-in of the post-war depression, they could not continue their work at the same pace. Besides these two reasons it must not be overlooked that in recent years the tendency has been for bigger mines and copper refining works to purchase the smaller mines' copper ores, in order to manufacture raw copper on a larger scale. For instance, the recent increase of Sagaseki copper was due to the fact that it manufactured copper ores purchased from smaller mines, as the Sagaseki mine has not sufficient ores of its own.

Thus, the smaller mines are considerably handicapped; but even the larger ones are not flourishing, owing to the losses incurred during the post-war depression and to the fact that the vast capital newly invested during the War for the purpose of dealing with the war time demand has not been remunerated enough in the present state of the industry, although the output exceeds slightly the pre-war level.

In these difficult circumstances the copper mining firms, in order to protect the home industry, urged the Government to raise the tariff on imported copper. In 1922,

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Parliament passed the new tariff¹ which increased copper duty from yen 1·20 to yen 7·00 per 100 kin.

The benefit of this was, needless to say, of temporary assistance to the firms concerned; but on the other hand, it tended to keep prices of copper high and increased the cost of production in Japan, as the industry had no keen competition from abroad. In consequence of this, Japan was bound to lose her prestige as a copper exporting country. The fact appeared clearly on the returns of foreign trade, showing that export of copper had greatly decreased of late.

Apart from the copper export, in order to adjust the present unfavourable state of the industry, amalgamation of the mines and firms concerned must be considered first, since it is one of the most obvious ways of making a reduction of the cost of production. However, this proposal is not favourably looked upon by the big industrialists who own, as mentioned already, the main copper mines. They hold aloof because they regard their own mines as family inseparable property, and hold to the belief that as landlords they should hold tight to their estates in spite of all business considerations. As a consequence, instead of finding out a way to reduce the cost of production, their movement regarding the protective policy was formed, and they successfully urged the Government to raise the tariff, by which they not only sell their products at high prices, but also they are able to avoid separation of their mines. In other words, for the sake of these industrialists the people have to pay higher prices for copper manufactures, and the copper

¹ RATE OF TARIFF ON FOREIGN COPPER
(Per 100 kin)

Items.	Before April, 1922 (Yen.)	After. April, 1922 (Yen.)
1. Ingots and slabs	1·20	7·00
2. Bars and rods	8·90	15·00
3. Plates and sheets	9·95	16·20
4. Wire—		
A. Not coated with metals—		
(a) Not exceeding 0·5 millimetre in diameter	13·10	19·30
(b) Other	9·50	15·70
B. Coated with base metals	14·20	20·40

industry has been thus left in this very unsatisfactory condition.

Apart from the decline of the copper industry in this direction, it has shown a tendency towards progress in copper manufacturing. The firms concerned have had to undertake the business of manufacturing copper goods. The chief mining firms have started this line under the names¹ of fresh companies, control of which they hold fully or partly; they are nearly all successful in manufacturing copper goods, such as wires, plate and sheet, bar, pipes and electric necessities.

Besides these larger firms, several minor ones have been established, owing to the recent increase of home demand for finished copper goods. As to copper consumption in Japan, as shown already, it advanced rapidly from 32,000 tons in 1914 to 75,000 tons in 1921, of which copper wire, plate and sheet, bars and pipes in the general use comprise more than 80 per cent out of the whole manufactures.

The Future of the Copper Industry.

Thus, the present state of the Japanese copper industry indicates retrogression from the pre-war condition in respect both of output and of export. The total quantity of copper export fell from 76,600,000 kin in 1914 to 2,964,000 kin in 1923; on the other hand, the import increased from 300,000 kin in 1914 to 39,000,000 kin in 1922, although it dropped to 10,300,000 kin in 1923, owing to the high tariff of 1922. It is clear that in the future the export of Japanese copper will not be expected to recover its pre-war volume, but the import of foreign copper will probably increase if the present state of the industry continues.

¹ NAMES OF THE COPPER MANUFACTURING FIRMS.

Names.	Under Control of.
Hidati Copper Works.	Kuhara and Co.
Sumitomo Copper Works.	Mitsubishi and Co.
Electric Wire Works.	Mitsubishi and Co.
Furukawa Electric Works.	Furukawa and Co.
The Industrial Co.	Furukawa and Co.
Kosaka Mining Works	Fujita and Co.

The present high copper prices in Japan are the result of the protection of the high duty and the monopoly of a few copper industrialists on the top of high cost of production. Besides, as the consumption increases, these few mine owners tend to raise the price, as the recent output of copper in Japan cannot supply the whole demand. Consequently more foreign goods will be imported, jumping over the high wall of the duty. It is impossible at present that the present high prices of Japanese copper will be lowered to the extent that the copper may be able to be exported against foreign competition. Therefore, it can be said, in conclusion, that not only has Japan lost her position as a copper exporting country after the War, owing to the high cost of copper production and an unsound policy of protection, but it is also now faced with foreign competition even in the home market.

§ 2. IRON AND STEEL INDUSTRY

Amongst the industries affected by the post-war depression, the iron and steel industry in Japan was obviously the one which suffered most. This industry was expanded on a large scale, and more than yen 400,000,000 of new capital was invested in it during the War. Although aided by the encouragement and protection of the Government, the industry suffered very severely from post-war contraction.

The Conditions prior to the Great War.

Before the introduction of Western iron smelting methods, iron and steel materials in Japan were mainly supplied by sand iron in the district of San-in. On the importation of foreign material after the Meiji Restoration home products were gradually forced down by the strong competition of foreign goods, but the method of manufacturing iron greatly improved from time to time till at last its products were comparable to those imported.

In the meantime, the first iron works run on European lines was established under State management in 1900, five

years after the scheme had been proposed. Although the works did not at first show the results expected, their yearly output increased, and began to show a slight profit within a few years of their establishment. Encouraged by the success of the Government iron works, and the increased demand for the material, several private iron works, such as the Kamanishi, Wanishi and Senjinzan works, were formed in succession, with the result that the output¹ of pig iron reached 242,000 tons and of steel 255,000 tons in 1913.

This output did not, of course, suffice for the whole consumption² of home industries, which, in 1913, was about 515,600 tons of pig iron and about 755,300 tons of steel. Therefore, Japan's capacity at that time for supplying iron was 47 per cent of the total demand for pig iron and 34 per cent of the demand for steel. Moreover, so far as the private iron works were concerned, their supply capacity was only 16 per cent of pig iron and 5 per cent of steel, which shows the insignificant position they held before the War.

¹ OUTPUT OF IRON AND STEEL IN JAPAN
(1913)

Names of Works.	Pig Iron (Tons).	Steel (Tons).
Government Works	159,524	216,222
Kamanishi Iron Works	73,189	13,476
Senjinzan " "	2,194	—
Kuriki " "	2,192	—
Others (including sand iron)	5,595	25,354
Total	242,694	255,052

² CONSUMPTION OF IRON BEFORE THE WAR
(1913)

	Pig Iron (Tons).	Steel (Tons).
Home production	242,694	255,052
Importation	273,310	529,285
Total	516,004	784,337
Re-exportation	358	29,000
Net consumption	515,646	755,337
Percentage of home production towards net consumption	47	34
Percentage of production of private iron works towards net consumption	16	5

Rapid Development of Private Iron Works after 1914.

Since the outbreak of the War, prices of iron material rose so high that iron firms were established in rapid succession, and at the end of 1918 numbered more than 250. As a result of this unprecedented development, the output of iron in Japan in 1919 increased by 330 per cent in regard to pig iron, and 220 per cent in regard to steel, compared with the figures of 1913. It will be noted that the relative importance of the Government and private iron works before the War was reversed since 1918, seeing that the percentage of the total production of iron in Japan, which the former held, has now been acquired by the latter.

OUTPUT OF IRON DURING THE WAR
(tons)

	Government.	%	Private.	%	Government.	%	Private.	%
1913	150,542	66	83,152	34	216,222	85	38,830	15
1918	271,678	39	423,260	61	308,829	57	230,808	43
1919	281,135	35	515,940	65	240,387	45	306,798	55

During this period, almost all private firms concerned with the iron industry made enormous profits. The most striking instance is that of the Nippon Kokan Kaisha (Japanese Steel Tube Co.), which before the War showed a yearly deficit, and now managed easily to obtain more than 72 per cent net profits for paid-up capital, and nearly all the other firms declared a dividend of 25 per cent to 50 per cent before the Armistice, despite the fact that they were mostly established during the War and had only small experience of the trade.

However, this boom did not favour them long, and as soon as the severe post-war depression set in they came completely to a standstill. The industry would not have received such a sudden and severe shock if the enormous profits gained by firms during the War had not been recklessly used for the expansion of works. Had they been used for research work and study for further improvements of the industry, and for the purpose of providing a reserve for the inevitable depression which follows after such

abnormal briskness, this industry would not now be so badly off. As a matter of fact, the majority of the new firms were war-time "mushroom" ones, and, therefore, were not, owing to the short period of establishment, in very satisfactory financial circumstances. The management of these firms naturally became confused by the sudden change of affairs, and they found that they could not fight through this critical period without resorting to amalgamation and reduction of capital. Having passed through such feverish times, the full capacity of production was reduced in a considerable degree, yet it is estimated at present that the productive capacity of pig iron furnaces¹ is about 1,412,000 tons and steel furnaces² 1,482,600 tons a year, of which the capacity of private iron works holds 72 per cent of the former and 58 per cent of the latter.

However, the actual output by these establishments was far below their estimated productive power, as they showed only 566,500 tons pig iron, or 41 per cent of the estimate, and 557,800 tons steel, or 37 per cent in 1921. It is therefore obvious that the pig iron furnaces were 59 per cent short of their potential output, and that likewise the steel furnaces were 63 per cent short. Private works operated only up to 20 or 30 per cent of their capacity since the post-war depression, while the Government iron works have been supplying about 60 per cent of the whole iron production in Japan.

¹ NUMBER OF PIG IRON FURNACES

Capacity (Tons).	Number.
5-35	42
36-100	6
101-200	6
201-300	9
Total	63

² NUMBER OF STEEL FURNACES

Capacity (Tons).	Number.
1-50	24
6-10	21
15	13
25	52
40	1
50	10
60	4

Difficulties of the Industry.

The question which has to be considered is what relation the actual output of iron works bears to the total consumption of iron material in Japan. The actual consumption¹ a year of these materials is considered of late to be about 800,000 tons pig iron and 1,200,000 tons of steel, of which Japan can supply only less than 50 per cent in pig iron and 50 per cent in steel. Moreover, so far as the output of private works was concerned, their contribution was further reduced to 139,000 tons pig iron, or 14 per cent, and 254,000 tons steel or 21 per cent in 1921. Thus, the iron industry of Japan has not grown to its full stature. From a private enterprise point of view, especially, a considerable period must elapse before it attains a satisfactory state, although the amount of capital invested during the War exceeds yen 400,000,000, of which the State Iron Works hold about one-fourth, and the paid-up capital of the nineteen principal private works

¹ PIG IRON CONSUMPTION OF JAPAN
(Ton)

Years.	Home Production.	Import.	Re-Export.	Nett Consumption.
1896	26,122	39,035	—	65,157
1906	145,455	103,443	373	248,525
1913	242,694	273,310	358	515,646
1914	301,726	172,134	187	473,673
1915	320,627	172,685	400	492,912
1916	391,892	277,655	1,642	627,905
1917	462,791	235,083	3,322	694,552
1918	694,938	267,741	1,146	961,533
1919	797,075	348,707	1,894	1,143,888
1920	529,875	390,298	2,514	917,659
1921	480,300	276,284	3,693	752,891

STEEL CONSUMPTION OF JAPAN
(Ton)

Years.	Home Production.	Import.	Re-Export.	Nett Consumption.
1896	1,192	220,757	—	221,949
1906	69,375	348,136	4,942	412,569
1913	255,052	529,285	29,000	755,337
1914	282,516	390,288	27,000	651,804
1915	342,870	233,639	26,000	550,509
1916	381,221	416,968	22,246	775,943
1917	513,445	673,210	51,739	1,134,916
1918	539,637	650,780	61,007	1,129,410
1919	547,185	724,991	105,240	1,166,936
1920	537,461	1,039,452	97,382	1,479,531
1921	561,829	646,801	85,208	1,123,431

reached yen 306,000,000, including debentures and borrowed money. Most of this capital was raised during the War, and many works are now lying idle, as their machines and other equipments, which were carelessly established during the War, are not now workable under the post-war conditions, owing to the competition of superior foreign products.

Why is the iron industry in Japan unsatisfactory? It is mainly due to two factors: first, lack of iron ores, and, secondly, the insufficient supply of fuel, especially of coal. Take the question of iron ores first. The available amount of 50 per cent ore in Japan is estimated only at 100,000,000 tons on the whole, and that includes 50,000,000 tons of Chosen and Formosa ores. Not only is two tons of 50 per cent ore necessary to produce one ton of pig iron, but it is doubtful whether the above estimate will be available to be mined on a commercial scale. Japan is naturally handicapped greatly in the iron industry in respect of raw material: it cannot carry on without supply of foreign ore.¹ As a matter of fact, the output of home ore is estimated at about 87,000 tons a year, and by far the major part of the ore used is imported. It amounted to 765,000 tons in 1922, of which the colonies and foreign sources supplied 30 per cent and China 70 per cent. It is obvious that the industry in Japan has to rely on the supply of Chinese iron ores, which on an investigated estimate not only reaches an enormous amount,² but also shows the quality to be infinitely better than that of Japan.

¹ IMPORT OF IRON ORE
(Ton)

Years.	China.	Great Britain.	Chosen.	Total.
1913 . . .	277,883	—	142,420	422,316
1914 . . .	297,188	1,991	162,044	460,912
1915 . . .	308,074	1,682	201,978	510,766
1916 . . .	279,216	660	190,225	470,016
1917 . . .	295,688	561	120,907	417,788
1918 . . .	360,930	—	236,611	598,773
1919 . . .	595,140	—	337,901	958,987
1920 . . .	650,527	—	332,533	994,901
1921 . . .	439,769	—	190,541	768,597

(The total includes others.)

² It is estimated that 360,000,000 tons of iron ore can be easily mined out of the three mines Taiya, Kinreiten and Dakanzan in China, and if added to by those of Anhwei, Kiang and Hupeh districts, the total estimate amounts to more than 1,100,000,000 tons.

If Japan can rely on getting Chinese supply easily, its prospective future could be assured to a certain extent, although there will always be some disadvantages in relying upon importation of foreign raw materials. The ore supplied by China is also cheaper and better than American ore. However, the acquisition of Chinese ore is not easy, and the industry in Japan will not be able to depend entirely upon it, as the Chinese Mining Law of the fourth year of the Republic prohibits mining undertaken by aliens other than mining engineers. The Chinese Government has exclusive rights of buying ore, and foreigners must get a Chinese Government permit in order to purchase Chinese iron ore. Therefore, it is not always to be expected that Japanese iron works can obtain a constant and sufficient supply of Chinese ore. Secondly, coal, which is the most important and indispensable fuel for industry, has not been obtained up to the present cheap enough or sufficient enough in Japan for use in iron smelting, the output of coal being, as described in the following section, by no means large at present, and, moreover, prospects of future increase of output are poor. Comparing the price of American coal used in the iron industry with the price of Japanese coal, we find the latter to be about 30 per cent dearer than American coal. In addition to this, Japanese iron works consume on an average two tons of coal in order to produce one ton of pig iron, and about the same quantity for steel, whilst in America one and a half tons does in each case. It is clear that Japanese works burn a larger quantity and dearer coal than American works; with the result that the former suffers from an obvious disadvantage in respect of cost of production.

Unless these two fundamental deficiencies of raw materials and fuel are removed a prosperous future for the industry will never be materialized. It is feared that iron material produced by Japanese works will sooner or later be faced with competition from those of China and India, which are in more favourable circumstances in regard to raw material and low wages. This will not be for some years, as it will take time for them to become efficient steel exporting

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countries, since their labour is not fully skilled, and they lack advanced technical knowledge. However, Indian pig iron has been invading the Japanese market at a price lower than the cost of production of Japanese iron, and at the same time the industry in China, which has been progressing recently, is expected, with its favourable productive conditions, to expand its markets right into Japan. Indian¹ and Chinese pig iron is usually delivered about yen 15 per ton cheaper than Japanese stock of the same quality. Taking unloading and other cost and the customs duty of yen 0.83 per 100 kin into consideration, the price of Japanese stock will not be cheaper than the imported materials.

So far as the present state of the industry in Japan is concerned, American steel is the chief and most serious competitor that the home product has to contend with. In fact, the home market has for some time been under the influence of American goods. According to the recent trade returns,² 80 per cent of the total amount of steel annually imported into Japan is American steel. It is to be feared that the position of the Japanese steel industry will be unlikely to improve so long as American steel products continue to be supplied at such keen competitive prices against Japanese goods.

Observing these facts, we cannot help but come to the

¹ PRICES OF IMPORTED AND JAPANESE PIG IRON
(Per ton)

Years.	Chinese (Yen).	Indian (Yen).	Japanese (Yen).
1922 . .	52.00	55.00	68.00
1923 . .	49.00	48.00	69.00

² STEEL IMPORT OF JAPAN
(Ton)

Years.	China.	England,	Germany,	Sweden.	U.S.A.	Total,
1912	19	177,030	177,905	4,165	191,736	618,541
1913	4	162,014	197,254	6,603	97,064	529,266
1914	—	115,524	161,228	4,182	65,060	395,988
1915	527	84,737	6,454	4,832	131,925	232,926
1916	4,214	114,584	3,809	13,317	276,244	416,708
1917	8,699	24,195	16	4,484	628,260	672,743
1918	11,299	6,826	224	1,871	625,140	650,341
1919	1,071	69,882	—	3,474	645,590	721,831
1920	12,397	140,568	1,885	3,885	857,822	1,024,743
1921	1,174	98,617	39,252	4,064	455,015	625,629

(The total includes that from Japanese colonies.)

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conclusion that the iron and steel industry's future in Japan is very unpromising. The insufficient supply of raw material, dearer fuel and keen competition from foreign countries will be a perpetual menace to the future development of the industry. In fact, the iron and steel goods produced by existing firms largely consist of those which have less competition from abroad, such as arms, accessories and parts of machines, and not of general iron and steel material, such as sheet, plate, bars, wire, etc., the latter¹ being mainly imported from foreign countries.

The Future of the Industry.

The prospects of the industry's development and of its ability to overcome the above-mentioned disadvantages will depend upon whether Japanese firms concerned will be able to improve organization and also aim at further

¹ MAIN ITEMS OF IMPORT OF IRON AND STEEL MANUFACTURES
(1,000 Kin)

Years.	Bars, Rods and Angles.	Wire Rods.	Tinned Iron and Steel Sheets.	Plates and Sheets (not Coated with Metal).	Plate and Sheets Galvanized.	
					Corrugated.	Other.
1913	308,677	7,658	44,143	1,662	24,312	32,848
1914	257,914	5,760	43,530	1,436	13,524	19,531
1915	97,704	16,674	44,510	670	4,362	7,850
1916	239,430	31,500	65,507	1,264	4,298	3,835
1917	329,398	42,290	44,746	1,841	4,344	2,854
1918	442,985	54,977	48,906	940	1,417	2,384
1919	318,210	62,827	62,226	2,692	1,793	5,922
1920	495,581	75,054	82,330	3,211	12,026	30,160
1921	248,532	35,888	71,879	959	10,891	17,063
1922	411,543	90,130	95,763	2,592	8,355	13,094
1923	332,205	90,550	92,236	1,847	5,605	6,721

MAIN ITEMS OF IMPORT OF IRON AND STEEL MANUFACTURES
(1,000 Kin)

Years.	Wire.	Ribbons.	Bands and Hoops.	Wire and Twisted.	Tubes and Pipes.	
						1913
1914	4,451	34,202	1,388	5,812	1,977	46,645
1915	4,520	36,694	1,166	2,167	614	14,550
1916	4,775	30,766	1,817	5,139	758	26,463
1917	4,347	30,994	656	6,789	605	43,438
1918	9,651	35,288	1,315	7,583	119	55,788
1919	5,114	41,608	1,657	9,034	386	50,110
1920	2,479	43,854	1,633	13,355	548	66,674
1921	3,581	41,806	1,681	8,480	1,160	33,292
1922	6,394	85,580	2,113	13,615	2,144	48,729
1923	3,985	50,590	1,323	12,700	1,475	49,761

improvement by technical research work. If Japanese coal is not profitable to use it must be superseded by some other cheaper fuel. Japan has fine facilities for generating electricity by water power, and this is a great potential source of cheaper fuel. The use of electric power as a substitute for coal is not by any means an easy task, owing to the fact that the Japanese electrical industry is not yet fully developed to the extent of providing power freely, and is, therefore, not in a position to supply it cheaply. In regard to the technical improvement of the iron industry there is undoubtedly great room for an advance on existing processes not only in the finishing work of manufacture, but in the process of production.

Management and organization can be improved by the exercise of care and ability, and under efficient management there is no doubt that the industry would be more effective and could be worked at less cost. For instance, if the existing small factories were replaced by ones on a larger scale, which would, of course, mean the amalgamation or readjustment of firms under strict financial investigation, the productive efficiency of each factory would be greatly increased. It is a well-known fact that the factories established in such haste during the war boom were so carelessly constructed that now, under the stress of keen competition, they are altogether insufficient and unadapted to present-day needs.

This review of the Japanese iron and steel industry shows that Japan has made great progress in this line of production during the last two decades. Yet her prospects of becoming a leading iron and steel manufacturing country are remote. The two chief disadvantages under which she labours are, first, that the cost of fuel is high, and, secondly, that her supply of raw material is inadequate. These are handicaps that are not easily overcome, and no amount of improvement of the processes of manufactures can fully counteract the depressing effect which they are bound to have on the future progress of the industry. At present Japan is not self-sufficient in regard to her needs of iron and steel, and it is not likely that she ever will be. The imports of these

goods¹ are considerable, and they have increased rapidly since the Great War, amounting now to 10 per cent of the total value of all imports.

§ 3. COAL INDUSTRY

Japanese coal is mostly of a brown bituminous kind. Of all the minerals it is the most important, but large deposits are very few. The coal fields, besides the well-known ones in Iwaki and Hitachi, are mostly located in Kyushu and Hokkaido. The most important mines are Miike and Chikuho in Kyushu and Ishikari in Hokkaido. The products of these two districts are superior in quality to those of the other districts. Anthracite coal is found in the provinces of Higo, Nagato and Kii, but not in very large quantities.

A fairly rough estimate of the total deposits of coal gives the figure of 3,762,000,000 tons. However, the estimate of the Mining Bureau of the Department of Agriculture and Commerce is 1,738,000,000 tons, of which about 1,000,000,000 tons are in Kyushu, 568,000,000 in Hokkaido and 170,000,000 in the district of Honshu. Therefore, Kyushu, Hokkaido and Honshu respectively contain about 75 per cent, 15 per cent and 10 per cent of the total deposits of coal in Japan.

Outline of Development.

Coal deposits in Japan had not been worked for industrial purposes before the Restoration. But after that with the introduction of Western industry they were opened up. As shown in the following table, the total output of coal in 1875, before which the statistics are not obtainable, was only 567,000 tons, then it rose rapidly to 3,317,000 tons

¹ IMPORT VALUE OF IRON AND STEEL

Years.	Value (Yen).
1868-1872 (average)	354,000
1873-1877	837,000
1878-1882	1,397,000
1883-1887	1,177,000
1888-1892	2,261,000
1893-1897	6,215,000
1898-1902	15,009,000
1903-1907	28,168,000
1908-1912	38,746,000
1913-1917	85,433,000
1918-1923	216,141,000

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just before the Japanese-Chinese War (1894-1895), and again increased to 10,000,000 tons in the space of the next ten years. As time went on the output showed greater returns and reached 21,300,000 tons before the Great War. During the War the increasing figures were recorded every year with the exception of 1915, and the output reached the climax in 1919. Since then, however, the output showed a downward tendency, owing to the post-war depression and to the increased use of electricity, but since 1922 it has again been increasing.

At the same time the coal industry shows considerable development, judging from the increase of capital invested and the number of miners. The authorised capital, which was only yen 28,031,000 in 1905, increased every year after, and more especially after 1917. In 1921 it reached yen 414,380,000, which is almost fifteen times more than that of 1905. The number of coal mining companies and their workers have increased correspondingly, as shown in the following table. The largest number of workers was registered in 1919, but it tends to decrease of late, owing to the post-war depression, as already indicated. The total number of workers in 1921 was 342,240; of this number some 95,000 were women and 4,000 children

NUMBER OF COAL MINING COMPANIES AND THEIR CAPITAL AND WORKERS

Years.	No. of Companies.	Authorised Capital (Yen).	Paid up Capital (Yen).	No. of Miners.
1905	41	28,031,000	26,119,000	—
1906	56	40,721,000	30,006,000	—
1907	71	65,109,000	31,425,000	—
1909	96	78,401,000	33,962,000	—
1912	91	68,906,000	30,191,000	—
1913	100	62,705,000	39,247,000	172,446
1914	113	77,550,000	63,206,000	182,637
1915	116	76,458,000	62,497,000	193,142
1916	118	78,458,000	63,829,000	167,907
1917	146	111,459,000	86,681,000	259,144
1918	203	174,496,000	123,330,000	289,159
1919	273	355,030,000	209,601,000	348,340
1920	321	365,589,000	190,674,000	342,873
1921	330	414,385,000	204,999,000	342,240

AVERAGE INCREASE OF COAL OUTPUT

Periods.	Average Output (Tons).	Percentage Increase on the Preceding Periods.
1877-1884 . . .	802,000	—
1885-1894 . . .	2,562,000	318
1895-1904 . . .	8,031,000	313
1905-1914 . . .	16,826,000	209
1915-1923 . . .	22,349,000	133

COAL OUTPUT OF JAPAN

Years.	Output (Tons).	Years.	Output (Tons).
1875 . . .	567,000	1900 . . .	9,027,000
1876 . . .	545,000	1901 . . .	9,702,000
1877 . . .	499,000	1902 . . .	10,089,000
1878 . . .	680,000	1903 . . .	10,724,000
1879 . . .	858,000	1904 . . .	11,542,000
1880 . . .	882,000	1905 . . .	12,980,000
1881 . . .	925,000	1906 . . .	13,804,000
1882 . . .	929,000	1907 . . .	14,825,000
1883 . . .	1,003,000	1908 . . .	15,048,000
1884 . . .	1,140,000	1909 . . .	15,048,000
1885 . . .	1,243,000	1910 . . .	15,681,000
1886 . . .	1,312,000	1911 . . .	17,633,000
1887 . . .	1,670,000	1912 . . .	19,640,000
1888 . . .	2,008,000	1913 . . .	21,316,000
1889 . . .	2,421,000	1914 . . .	22,293,000
1890 . . .	2,598,000	1915 . . .	20,491,000
1891 . . .	3,169,000	1916 . . .	22,902,000
1892 . . .	3,177,000	1917 . . .	26,361,000
1893 . . .	3,317,000	1918 . . .	28,029,000
1894 . . .	4,767,000	1919 . . .	31,271,000
1895 . . .	5,020,000	1920 . . .	29,245,000
1896 . . .	5,188,000	1921 . . .	26,200,000
1897 . . .	6,750,000	1922 . . .	27,701,000
1898 . . .	6,776,000	1923 . . .	28,949,000
1899 . . .	5,489,000		

Consumption of Coal.

In order to obtain the total consumption figure, coal export must be excluded from the total of coal output and import, and the figures obtained must be further reduced by the amount of coal in store at the end of the year. Calculating in this way the rapid increase of demand for coal is as shown below :

	Consumption of Coal (Tons).
1893 (before the Japanese-Chinese War)	1,700,000
1904 (before the Japanese-Russian War)	6,900,000
1913 (before the Great War)	18,000,000
1920 (post-war boom)	28,000,000 ¹
1921 (post-war depression)	25,000,000 ¹
1922	27,000,000
1923	29,000,000

COAL OUTPUT, IMPORT AND EXPORT (1,000 TONS)

Years.	Output.	Total of Output		Export.	Balance
		Import.	and Import.		
1893	3,317	7	3,324	1,094	2,230
1897	6,750	69	6,819	1,530	5,289
1904	11,542	617	12,159	2,878	9,281
1907	14,825	18	14,843	2,922	11,921
1913	21,316	572	21,888	3,839	18,049
1918	28,029	761	28,790	2,179	26,611
1920	29,245	797	30,042	2,129	27,913
1921	26,200	777	26,977	2,387	24,590
1922	27,701	1,168	28,869	1,690	27,179
1923	28,949	1,685	30,634	1,574	29,060

Together with the increase of consumption, what must not be overlooked is the rapid decrease of coal export or, more precisely, its decreasing percentage. The percentage of coal export to the total output was 32 per cent in 1893, which shows the relatively important position which coal export held in the mining industry. From then onwards the percentage as well as the actual amount of coal exported (particularly after 1913) has shown a downward tendency despite the increase of coal output. This means that the

¹ In both years the coal consumption exceeds the balance, as during those years store-coal was used, which was carried forward from the previous years.

demand for coal in Japan is increasing, and steadily absorbing a greater percentage of the output—obviously a very healthy sign of industrial expansion.

At the beginning of the Great War and a year after, the coal market in Japan experienced an unprecedented slackness, owing to the over-production caused by decreased home demand and decreased export. Thus, the export of coal in 1915 was nearly one million tons less than that of 1913. Being stimulated by the financial boom after 1916 the demand for coal in Japan was all at once resumed, its briskness again resulting in increase of output, and, on the other hand, decrease of coal in store. However, as soon as the post-war depression set in it caused the closing down and cessation of work in several small mines, and in general the coal industry in Japan at this time had to meet a great set-back, owing to the fall of prices and the collapse of demand. This compelled the National Coal Mining Association to bring about a reduction of output by an agreement which reduced output by 12.5 per cent to 17 per cent, according to the various coal districts. This proved very successful, and the industry seemed to be recovering partly because of the general economic readjustment.

Uses of Coal.

Apart from the temporary set-backs which occurred from time to time, the coal consumption of Japan has, as the preceding tables show, grown rapidly in recent years. Analyzing the increase of consumption according to the sources and causes of the increased demand, we can observe the trend of Japanese industrial development.

1. At first coal was used almost solely for the manufacture of salt and as fuel for ships.
2. Then factories sprang up which monopolized a greater part of the coal output.
3. The combined demand of factories and ships soon exceeded the demand for all other uses.
4. And, lastly, comes the present time in which the demand for coal is mainly for manufacturing industries.

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PROPORTION OF CONSUMPTION AND EXPORT OF COAL TO THE TOTAL OUTPUT

Years.	Home Consumption.		Coal Export.	
	Quantity		Quantity	
	(1,000 Tons).	Per Cent.	(1,000 Tons).	Per Cent.
1888	1,100	54	387	18
1893	1,700	51	1,094	32
1904	6,900	60	2,878	24
1913	18,000	84	3,839	18
1920	28,000	99	2,129	7
1921	25,000	96	2,387	9
1922	27,000	97	1,690	6
1923	29,000	100	1,574	5

IMPORT AND EXPORT OF COAL

Years.	Import (Tons).	Export (Tons).
1892	12,624	900,398
1893	7,445	1,094,754
1894	37,247	1,265,504
1895	68,931	1,376,068
1896	49,523	1,614,724
1897	69,123	1,530,147
1898	42,297	1,805,364
1899	51,154	2,013,693
1900	98,660	2,402,785
1901	112,635	2,922,215
1902	73,142	2,938,741
1903	120,354	3,433,469
1904	617,888	2,878,503
1905	295,953	2,507,527
1906	21,682	2,402,354
1907	18,461	2,922,490
1908	30,640	2,863,116
1909	115,028	2,844,274
1910	173,225	2,793,697
1911	181,363	3,041,347
1912	305,882	3,440,347
1913	572,194	3,839,881
1914	950,108	3,558,339
1915	609,799	2,900,885
1916	551,696	3,093,003
1917	707,421	2,791,600
1918	761,698	2,179,600
1919	699,646	2,000,697
1920	797,155	2,129,530
1921	777,255	2,387,709
1922	1,168,524	1,690,699
1923	1,685,877	1,574,305

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The first period is between 1868 and 1890, in which more than half the demand for coal came from salt manufacturers and ship owners. Thus, the coal consumed in 1890 is roughly classified as follows :

Use.	Quantity.	Percentage of Total Output of Coal.
For ships	461,000	20·8
„ salt manufacturing	477,000	21·5
„ factories	425,000	19·1
„ railways	69,000	3·1

The second stage may be said to have begun a few years before the Japanese-Chinese War lasting until the war with Russia. During this period a great industrial awakening took place resulting in a great increase of coal consumption. Between the years 1893 and 1903 coal consumption of railways increased five and a half times. The most significant thing is that coal consumed for factory use jumped from 425,000 tons in 1890 to 3,617,000 tons in 1903. However, the total consumption of coal for ships and salt manufacturing was 2,526,000 tons in 1903, or 34 per cent of the total output, which, as compared with 42·3 per cent in 1890, was a marked decrease.

The third stage was between 1904 and 1913. The beginning of the period was marked by the rapid progress of shipping and navigation, which necessitated huge quantities of coal. Coal for shipping was 6,544,000 tons in 1913, being nearly four times more than that of 1903. On the contrary, although the amount of coal for railways increased twofold in this period, the percentage it held of the total output was almost unchanged, and salt manufacturing showed a significant decrease, not only of percentage but of actual quantity. On the other hand, the demand for coal for manufacturing industries had been steadily increasing before 1903. In 1913 it reached 7,614,000 tons. Therefore, it may be said that the main sources of demand for coal during this period were from shipping and factories, as they held about 78·6 per cent of the total output of the year of 1913.

On the outbreak of the Great War the demand for coal increased prodigiously, owing to the establishment of new factories and the enormous expansion of various industries.

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As a consequence, the consumption of factory coal amounted to 12,700,000 tons and shipping coal reached 6,972,000 tons, both of which make nearly 19,700,000 tons, or 71·8 per cent of the total consumption of that year. On the occasion of the post-war slump, coal consumption declined about 10 per cent in 1921, as compared with that of 1920, but factory coal still held the highest percentage.

MAIN USES OF COAL (1,000 TONS)

Years.	For Ships.	For Railways.	For Factory.	For Salt Making.
1890 . . .	461	69	425	477
1893 . . .	438	130	729	458
1896 . . .	687	258	1,553	547
1899 . . .	1,225	492	2,574	664
1903 . . .	1,717	721	3,617	809
1907 . . .	4,620	1,044	4,421	774
1910 . . .	3,740	1,335	4,776	742
1913 . . .	6,544	1,786	7,614	798
1916 . . .	6,321	1,993	10,426	838
1919 . . .	5,844	3,273	14,819	864
1920 . . .	6,972	3,220	14,695	778
1921 . . .	6,200	3,200	12,700	800

High Price of Coal in Japan.

As mentioned above, the coal consumption of Japan during the last decade has shown a striking increase, but the rate of increase shows a tendency to slow down. The causes are higher price of coal and competition from the recently developed hydro electric works, which supply power much cheaper than coal. Not only is electric power less expensive, but Japanese coal is at present comparatively dearer than any foreign coal. The reasons for the high prices are chiefly three: (1) Coal mines in Japan are generally located far from the industrial districts, therefore, cost of transport adds considerably to the selling price, and the inadequate appliances for coal loading and unloading further aggravate this difficulty; (2) lower efficiency of miners; and (3) a rapid rise of other cost of production of coal since the Great War.

As to costs of transport, loading and unloading of coal, they are figured at about 38-33 per cent of the total cost of

production at Tokio in the case of Hokkaido steam coal, and 29-26 per cent in the case of Kyushu coal as shown below.

TRANSPORT AND OTHER COSTS OF COAL (1922)

	Hokkaido Coal from Muroran Port (Yen).	Hokkaido Coal from Otaru Port (Yen).	Kyushu Coal from Wakamatsu Port (Yen).	Kyushu Coal from Karatsu Port (Yen).
A. { Items.				
Railways	3.20	2.40	1.00	0.30
Loading of ships	1.00	1.00	1.50	1.30
Shipping to Yokohama	2.00	2.60	1.90	1.90
Unloading coal from ships	1.45	1.45	1.45	1.45
Cost of transport to Tokio (per ton)	7.65	7.45	5.85	4.95
Other costs (per ton)	14.50	14.50	13.90	13.90
Total cost at Tokio (per ton)	20.15	21.95	19.70	18.85
Percentage of A.	38	33	29	26

One of the greatest handicaps in coal mining, as in all other industries in Japan, is the low efficiency of the workers. The results of recent investigation have proved that a Japanese miner produces, on an average, 0.64 ton a day as compared with 0.8 ton of an English miner and 3.4 tons of an American, which, of course, means that the working efficiency of a Japanese miner is respectively only two-thirds and one-sixth of the latter two. We must not, however, overlook the fact that inefficiency is due not so much to their lack of ability, but mainly to the geographical features, viz. thin seams of coal which do not naturally lend themselves to the modern appliances. The reason why Japanese coal had an opportunity before the War of competing with the foreign coal, mainly in China and the ports of the South Seas, despite being so handicapped, was principally because the cost of labour was low, this advantage outweighing the other disadvantages. During and after the War, however, the miners' wages have risen considerably, so that the owners now have not the one advantage of low wages, whilst all the other disadvantages remain unremedied, and in consequence higher cost of production cannot be avoided. This has been further added to by the rapid rise of other costs of production, which used to be about 3 yen per ton, on an average, before the War, and are now between 11 and 14 yen according to the high charge of various items, such as rates and taxes, woods,

power, machines and benevolent and recreation funds for miners, and also to the fact that the recent decrease of coal output has caused a rise of the cost per ton.

PIT PRICE OF COAL (PER TON)

Kinds of Coal.	1913 (Yen).	1922 (Yen).
Iriyama coal	2.90	10.78
Ibaragi „	3.85	11.67
Iwaki „	2.69	13.24
Kyushu „	3.60	13.94
Ishikari „	5.34	14.50

Thus, the price of coal has risen rapidly, and on the top of this there has been considerable fluctuation of the prices which is by no means beneficial. The chief cause of the fluctuation is the instability of shipping freight charges, the percentage of which to the total price per ton varied from 5 per cent to 35 per cent from time to time. Obviously this fluctuation must be remedied if prices in the coal industry are to be stabilized.

Japan's Position as a Coal Mining Country.

Owing to the seams of coal being poor and the impossibility of working them with modern appliances, together with the rising cost of production compared with other countries, the coal industry of Japan is at present encountering great difficulties, and the prospects of its future development are far from rosy. Moreover, the coal fields in Japan are officially estimated to hold about 1.7 milliards tons, which is an exceedingly small figure compared with those of other coal producing countries.¹

¹ ESTIMATES OF COAL OF THE WORLD (Milliards tons)
(From the *Oriental Economist*)

The United States	3,838.7
Canada	1,234.3
Great Britain	189.5
Australia	165.6
Russia	60.1
Austria	59.3
Germany	423.4 (before the War)
France	17.6
Belgium	11.0
China	593.3
Japan	1.7 (the official estimate)

Again, it is doubtful whether the coal resources will continue to be mined on a large scale. Even now the seams are so awkward and so thin that it is difficult to work them at a profit. In fact, it seems inevitable for Japan to look to foreign sources, especially to China, on account of its proximity, for coal to supplement its own insufficient supply. This is especially true in the case of fuel for iron and coke works, for which Japanese coal is unsuitable, on account of the large constituent of sulphur in it and of its volatile nature.

Thus, the outlook for the Japanese coal industry is by no means promising. The decrease of output, the inferiority of coal and the rising cost of production show clearly that the fuel problem is becoming of urgent national importance, the solution of which is vital to Japan's industry and to her military prestige.

§ 4. PETROLEUM INDUSTRY

Mineral oil, which was called one of the seven mysteries of the Echigo district in Japan, was at one time regarded as a sacred inflammable water. However, since the Restoration, this oil has been used for engines, machinery and for various surgical purposes, but more especially as fuel, so that its importance has grown tremendously of late years. In fact, the aim of all progressive countries is to secure an abundant supply of oil because it is of such vital importance in modern times. The present "oil age" is so called because oil is more and more usurping the economic and strategic position, which coal formerly held and still partially holds. It is, therefore, very interesting to investigate what are the prospects for Japan with regard to such a requisite resource as mineral oil.

Oil in the Past.

The first oil enterprise was entered upon about three hundred years ago in the Echigo district, where the oil fields of Kurogawa, Niitsu, Myohoji and Yoshimidzu were well known. At that period such oil as was obtained was by primitive methods, and the first oil company (the Nagano

Oil Co.) to work on Western lines was established in 1868. Even then Western methods were very simple when compared to the most modern ones. From 1874 to 1879, several oil companies were formed, and crude oil output accordingly increased from 3,310 barrels in 1874 to 26,690 in 1879. Unfortunately the development of the industry was checked for about seven years from 1880, owing to internal difficulties which retarded industrial progress to a considerable extent. However, a fresh start was made in 1888. New companies were successively promoted, and the industry soon made rapid progress. The Nippon Sekiyu Kaisha (Japan Oil Co.), which is the largest concern in this line at the present time, was established in 1888 with a capital of yen 150,000. Soon after its establishment, an American drill machine was introduced which created an immediate beneficial effect on the output, and enhanced considerably the prospects of the industry. For the short period between 1890 and 1894 the number of companies established reached about two hundred, some of which were merely what are called "bubble" companies, formed for transaction of oil companies' stock or of oil prospects, and not carrying on actual oil production. Excluding the "bubble" companies the principal ones were as follows :

Names of Companies.	Established.	Capital (Yen).
Japan Oil Company	1888	150,000
Hokuyetsu Oil Company	1890	30,000
Hoden Oil Company	1893	15,000
Kurawo Oil Company	1894	75,000

The increase in the number of companies together with the introduction of Western methods and the increased demand for oil brought about a rapid growth in Japan's oil producing industry during these years. The output, which was about 32,585 barrels in 1887, increased to 74,200 in the following year, and in 1895 it further increased to 101,182, amounting to an increase of 26.7 per cent over the output of the former year, 1888.

Before and after the Japanese-Chinese War (1894-1895), the industry of Japan showed further activity, and its

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output in 1896 doubled that of 1893. When the financial depression of 1897 set in many weak and unsound companies were closed down, thereby bringing about a steady growth of the oil industry under the management of the remaining companies. By the adoption of the protective policy of 1899, which imposed an import duty on foreign oil, Japanese oil companies were given a great opportunity of putting the industry on a firm footing. The Nippon Sekiyu Kaisha (Japan Oil Co.) established oil refining works specially equipped with the latest American machinery and worked on the most up-to-date methods. However, in 1900 great competition arose with the International Oil Co. This company was incorporated in Japan with a capital of yen 10,000,000 by foreign investors, who had close connection with the American Standard Oil Co. Thus, Japanese oil companies had to meet with keen competition both from inside as well as from outside—from imported oil and from the company established under foreign management. However, demand was rapidly increasing, and output reached more than one million barrels during 1902–1903, as shown below.

OUTPUT AND IMPORT OF OIL

Years.	Output of Crude Oil (Barrel).	Import of Finished Oil (Barrel).
1893 . . .	101,231	1,070,180
1894 . . .	163,425	1,259,846
1895 . . .	160,729	996,129
1896 . . .	224,086	1,233,942
1897 . . .	248,623	1,377,549
1898 . . .	301,873	1,532,021
1899 . . .	510,114	1,182,795
1900 . . .	824,830	1,530,600
1901 . . .	954,663	1,664,162
1902 . . .	1,147,436	1,622,582
1903 . . .	1,276,490	1,285,380

The output after 1904 kept at this high level; in fact it became more prolific, owing to the working of powerful springs in several oil wells in Echigo and Akita districts, which recorded an output of 1,964,500 barrels in 1908.

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However, output¹ gradually decreased from 1908 up to the outbreak of the Great War, owing to the impossibility of drilling oil wells. At this time it was absolutely impossible to dig wells more than four hundred feet below the level, and then it took over a year to drill them. Nearly all wells were in a condition which rendered further drilling impossible, as they had already reached a depth of four hundred feet or more.

In 1912, the American rotary drill was introduced by the Nippon Sekiyu Kaisha, which enabled deeper sands to be reached, and it was first tried in the Nishiyama oil well. The result was so successful that deeper wells² were drilled in much shorter time, and it was realized that wells of three thousand feet could be explored without difficulty by the more effective drilling method.

Thus, the introduction of the new method revived the industry, which was then practically at a standstill, and caused a marked increase in the oil output³ from 1913 to 1916, when the record figure of 2,787,849 barrels was

¹ OUTPUT OF CRUDE OIL, 1904-1911

Years.	Output (Barrels).
1904	1,276,344
1905	1,409,677
1906	1,632,258
1907	1,935,483
1908	1,964,516
1909	1,881,720
1910	1,827,957
1911	1,666,666

Name of Wells.	Depth (Feet).	Days Needed.
Ige Field, Well No. 74	2,342	95
Kamada Field, Well No. 76	2,531	81

³ OUTPUT OF CRUDE OIL AFTER 1913

Years.	Output (Barrels).
1913	1,821,055
1914	2,481,113
1915	2,761,676
1916	2,787,849
1917	2,697,788
1918	2,303,859
1919	2,114,581
1920	2,161,475
1921	2,101,431
1922	2,041,974
1923	1,708,251

reached. Since that year the gradual decrease which has taken place is attributed to (a) the difficulty in discovering new oil fields, (b) the exhaustion of the present fields, and (c) competition from cheap imported refined oils, owing to greatly increased cost of labour and overhead expenses involved in field operation in Japan.

In regard to the present state of the important fields, the output of the Kurokawa in the Akita district showed more than 1,000,000 barrels in 1915, and it was regarded as the biggest and the most important field in Japan at that time. It now, however, yields only about 300,000 barrels a year, and it is believed that the oil which was contained in the main has been entirely drilled up, the present operations being merely carried on among odd wells. The Toyokawa field in the same district showed a gradual increase of output since 1917 until a peak of about 400,000 barrels a year was attained in 1921, but it is not expected that this field will yield an increasing output, although there are still a few oil wells untouched. The Michikawa field, opened in 1917, had a very promising start, and big springs of oil were obtained about three times of the present yearly output, but they declined very rapidly soon after 1919, and the field is now producing only about 80,000 barrels a year. The Niitsu field in the Echigo district, which was regarded as one of the most promising fields, has shown a decided drop in output since production reached the record figure of 1,000,000 barrels in 1907. It now yields only about 500,000 barrels a year. The other two fields in the same district, the Nishiyama and Higashiyama, which are both important ones, showed a production of 850,000 and 400,000 barrels respectively at the beginning, but are now in the same exhausted state as the others.

On the other hand, it is noteworthy that the firms concerned have been using the greatest possible energy to increase output, as will be seen by the increase in the number of oil wells. All the important fields, with the exception of the Higashiyama, have increased the number of their oil wells by 32 per cent during the seven years up to 1921. However, the decrease of output was continued since 1916.

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Moreover, as was inevitable, there was a decrease of output of refined oil brought about by the drop in crude oil output. For instance, the output of 2,259,000 barrels of refined oils in 1917, such as benzine, naphtha, lamp and engine oil, diminished to 1,628,000 barrels in 1921, or 28 per cent less than the former year. Despite the decrease of output, consumption has increased rapidly, and it is a fact that the output of 1921 was about 1,100,000 barrels short of the total quantity of oil consumed in that year, the shortage being supplied by foreign production.

Oil Area in Japan.

At present practically all of Japan's yield of oil comes from the petroliferous areas along the northern coast of Honshu, especially in the Echigo and Akita districts.¹ The minor districts of Nagano, Shidzuoka, Hokkaido and Formosa are, however, not so important as the former two districts. The oil area² of Japan is estimated at approximately 1,000,000 acres, of which only 80,000 have been prospected. More than 3,000 oil fields or deposits of oil have been located in the whole of Japan's territory, but not more than thirty of those have been actually exploited.

The Japanese Government has been energetically surveying likely territory, especially in the northern part of Honshu

¹ THE MAIN OIL FIELDS OF THE TWO DISTRICTS, ECHIGO AND AKITA

Echigo Districts.	Echigo Districts.	Akita Districts.	Akita Districts.
Niitsu.	Kanatsu.	Toyokawa.	Iwase.
Asahi.	Nagamine.	• Kurokawa.	Oguratoyokawa.
Higashiyama.	Nanokaichi.	Michikawa.	Yuri.
Nishiyama.	Omo.		

² OIL PROSPECTING AND CONCESSION AREA IN JAPAN

Years.	Prospective Lots.		Concessions.			
	Number.	Acreage.	No.	Acreage.	No.	Acreage.
1911	635	183,042	159	17,968	383	29,057
1912	587	176,902	161	20,758	358	26,561
1913	911	316,761	162	22,184	363	27,365
1914	1,174	426,791	162	22,674	364	27,506
1915	1,137	442,701	164	22,559	361	26,578
1916	1,336	546,763	174	25,181	351	24,958
1917	1,662	710,701	186	26,208	333	24,885
1918	1,947	856,248	176	25,090	353	28,051
1919	1,916	856,605	206	26,780	330	27,432
1920	1,952	875,011	212	28,518	342	29,740
1921	2,416	1,076,985	210	29,018	352	29,598

(From the *Oil Engineering and Finance*.)

and in Japanese Saghalin, but it appears that the results have been rather disappointing as the deposits have proved too poor for commercial exploitation. Therefore, Japan's domestic supply of oil will most likely be procured, as it has been, from the present oil areas, such as Echigo and Akita and their immediate vicinity. The struggle to increase output in these districts shows that the extensive use of modern drilling methods is absolutely necessary in order to work effectively. Deeper deposits can be drilled on a larger scale than has been the practice of Japanese companies in the past, and also extensive surveys by experienced geologists will, no doubt, be of great assistance.

Importation and Japanese Companies.

Import of petroleum commenced before the Meiji Restoration. Since 1868, when about 650 barrels were imported, it increased yearly, reaching 1,000,000 barrels in 1893. Up to this time the supply of petroleum in Japan had been entirely provided by foreign production, as the industry could not cope with home consumption, although Japanese oil output recorded about 100,000 barrels in that year. However, during the next ten years the oil industry in Japan commenced to show signs of progress, and, as already described, the output increased from 100,000 barrels in 1893 to 1,276,000 in 1903. As a consequence, keen competition took place between home-produced petroleum and foreign oil; and the competition became more acute in 1908, when the Nippon Sekiyu Kaisha had a great flow of crude oil, which gave great hopes of the industry in Japan of extending its market, despite the fact that foreign oil held the first position in the home market. In the meantime, the Rising Sun Oil Co. and the Standard Oil Co., which were the two most important companies in Japan, started new schemes, and both set up works for refining imported crude oil, in order to cope with the commercial challenge of home companies. Thus, the competition among home and foreign oil companies came to a head at the end of 1910. Those who could not keep up the conflict so long, and who realized that it was by no means a wise policy to do so,

eventually came to an agreement with these three companies and the Hoden Sekiyu Kaisha, by which they regulated the sale price and the percentage which the respective companies could supply of the total oil consumption of Japan. The supply percentage was fixed at a rate that enabled foreign oil companies to supply 65 per cent of the total yearly consumption, the remainder being supplied by home companies. However, this agreement was frequently broken by both sides, owing chiefly to disagreement between foreign companies and partly to the inadequate outlet for Japanese oil when home production increased. In fact, the rapid increase of oil production in Japan from 1914 to 1917 resulted in immense decrease of oil import. But as soon as the oil production slowed down in 1918, foreign oil¹ regained its previous position of supplying two thirds of the whole consumption of oil. The smaller the home production the more foreign oil was imported, and this tendency has been going on ever since 1918.

From the beginning home oil production was not sufficient to supply the whole consumption of Japan. Therefore, the duty on foreign oil for the purpose of protecting the home industry undoubtedly raises the price of oil. As a consequence, it was quite natural that an attempt was made to manufacture refined oil from imported crude oil, which was at one time exempted from duty. *As a matter of fact, the attempt was tried once or twice before the Great War, but came to failure, owing to mismanagement and insufficient equipments, also to the imposition of duty on crude oil. However, after the War, especially since 1921, being encouraged by being able to purchase foreign crude oil cheaper than before, and by the fact that the home price of refined oil was raised, the oil refining industry

¹ IMPORT OF FOREIGN OIL (1,000 GALLONS)

Years.	Crude Oil.	Petroleum Benzine.	Kerosene (In Can.)	Kerosene (Not in Can.)	Mineral Colza.
1918	1,271	2,757	9,667	13,609	291
1919	2,511	2,663	8,630	28,728	210
1920	4,157	6,105	8,431	25,480	551
1921	11,234	5,813	10,386	16,687	122
1922	23,665	11,836	12,334	21,325	176
1923	47,180	12,844	13,652	17,612	253

(This table does not include import figures of the Navy.)

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once more tried the experiment. This time success seems to be assured, as the import figures of crude oil for manufacturing purposes have been increasing steadily as shown in the foregoing table. What must not be overlooked in estimating the future prospects of this attempt is that its success is wholly dependent on the difference between the market price of refined and crude oils. The greater the difference the more advantages will be gained. Nevertheless, the oil refining industry is in many ways very unsettled, as it is realized that the import duty on crude oil will not always be stable. It is likely to be raised at any time for the purpose of protecting the home oil industry. Moreover, the contract of importing crude oil agreed upon as a favourable way out cannot be expected to be carried out in the future as it is now. Generally speaking, it is a problem whether the oil refining industry in Japan has sufficient commercial advantages to combat competition of imported refined oil. Therefore, although the recent increase of imported crude oil is a good omen for the latest attempt, its future activity is bound to be menaced by these uncertain circumstances.

Future of Japanese Oil Industry.

Generally speaking, during the last decade the oil industry¹ of Japan has, as mentioned elsewhere, developed

¹ OIL COMPANIES AND THEIR CAPITAL

Years.	No. of Companies.	Authorised Capital (Yen 1,000).	Paid Up Capital (Yen 1,000).
1905 . . .	47	32,902	12,291
1906 . . .	37	31,052	12,220
1907 . . .	31	50,042	28,303
1908 . . .	25	45,992	29,122
1909 . . .	28	41,192	30,693
1910 . . .	30	42,806	33,046
1911 . . .	27	43,156	33,626
1912 . . .	26	39,993	33,592
1913 . . .	28	51,456	31,522
1914 . . .	33	53,031	40,786
1915 . . .	33	52,641	40,696
1916 . . .	34	57,641	41,321
1917 . . .	35	77,021	49,656
1918 . . .	39	100,596	63,066
1919 . . .	42	100,770	63,137
1921 . . .	46	113,346	86,209

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rapidly. However, regarding the future of the industry, the question rests entirely upon the possibility of oil production. It is said at present that the prospecting oil fields throughout the Empire number about eighty, excluding the number of the present fields in operation. Of these eighty, however, only twenty give promise of having a good supply of oil.

According to the investigation made by Professor Iki, the total oil production of Japan will never exceed 3,000,000 barrels a year, even when the expectation regarding the probable oil fields is fully realized. If this is so, the limit of future production will be only an increase of two to three

MINERAL OIL OUTPUT OF THE PRINCIPAL COUNTRIES (1,000 barrels)

Countries.	1919.		1922.		1923.	
	Quantity.	Per Cent.	Quantity.	Per Cent.	Quantity.	Per Cent.
America	248,446	64.48	557,531	65.22	735,000	72.70
Russia	62,834	16.31	32,966	3.86	38,167	3.78
Persia	1,857	0.48	21,909	2.57	25,000	2.47
Mexico	25,696	6.67	182,278	21.32	149,472	14.79
D.E. Indies	11,172	2.90	16,720	1.96	15,000	1.48
Rumania	13,555	3.52	9,843	1.15	10,850	1.07
British India	7,930	2.06	7,700	0.90	7,575	0.75
Peru	2,071	0.54	5,314	0.62	6,375	0.63
Poland	—	—	5,227	0.61	5,000	0.49
Total (including others)	385,347	100	854,809	100	1,010,995	100

hundred barrels over that of 1916. On the other hand, what must not be overlooked is that in order to foster the production it is necessary first to encourage further investment which, however, appears to be very difficult, owing to the present industrial and financial situation. Therefore, it seems a very hard task not only to increase the output, but even to stop the decreasing tendency. At the same time it can hardly be hoped that home oil will be able to compete easily with foreign oil in respect of the cost of production.

On the other hand, home oil consumption has been rapidly increasing from 1,720,000 barrels in 1898 to 2,650,000 in 1921. If the Navy consumption be added the figure for 1921 reaches more than 4,000,000. In spite of this, home output

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has shown a yearly decrease since 1916, which was undoubtedly the cause of the increase of import of foreign oil especially from America, whose output showed a greater increase than any other oil producing country.

Judging from the present state of the oil industry and the unpromising omens of its future, and also from the fact that a cheap supply of oil is indispensable for various industries which must reduce cost of fuel, it is undoubtedly important that the abolition or a substantial reduction of duty on foreign oil should be taken into immediate consideration. Since the imposition of the duty on imported oil, the total amount of duty raised from that source amounted to about yen 92,300,000 up to 1921. It is natural that the price of home oil was accordingly raised, owing to the heavy tariff on foreign oil.

CHAPTER V

ENGINEERING INDUSTRIES

§ I. GENERAL MACHINERY

AS almost all the important industries in Japan were under State management in the early stages of progress, the machine-manufacturing industry was also controlled by the Government.

The shipbuilding industry, which is the oldest in this line, will be dealt with in the following chapter.

In the following sections we will describe separately the development of the engine and boiler and electric machine manufacturing industries. They made unexpected progress during and after the Great War, and are especially noteworthy amongst all other branches of the industry from the point of view of the present as well as the future prospects of prosperity.

In this section we will see roughly the state of the general machinery works.

The first attempt of an engineering enterprise, with the exception of the shipbuilding industry, was made by the Mita Seisakusho (Mita Works), Mita, Tokyo, established in 1879 and controlled by the Government, which employed at the beginning foreign experts for the purpose of educating native workmen. At the same time the Government took all the necessary steps to encourage private enterprise in this line of the industry. The Government's aid and encouragement, together with the general development of communication, transport and other industries, caused a rapid progress of this industry. The time for progress of the machine manufacturing industry started from the eighties. In 1887 the Sibaura Seisakusho (The Sibaura

Works) was established, and that was the first private engineering machine factory in Japan. Three years later a vehicle manufacturing firm was formed under a Mr. Hiraoka's private management. Both were successful, in spite of insufficient experience in this new line of production, and constant extension of their works took place under Government protection.

Stimulated by these successes, various machine manufacturing firms were formed within the short period of two or three years, and the number was 170 before the Japanese-Chinese War, 1894, of which 30 ran their own power establishments and the number of workers employed reached 7,850.

After the Japanese-Chinese War and up to the Japanese-Russian War, the industry showed a gradual progressive tendency, having increased its number of factories to 255 in 1906, thereby showing an increase of 50 per cent compared with 1894, with a threefold increase of workers, viz. 24,540 in 1906. Moreover, a striking development of the industry took place after the latter war. The number of factories increased in 1909 to 687, or more than four times the number they were before the war, and that of men engaged increased to 49,560, or more than double the number of 1906.

However, after the financial panic of 1908 in America, the engineering industry in Japan was financially affected, which not only decreased the number of factories and men engaged therein, but also forced firms to liquidate and amalgamate. From this time, however, the organization of the industry was greatly improved. Although the factories decreased in number, the horse power of engines in use was greatly increased, which shows that the scale of work was on an average much larger.

On the outbreak of the Great War an unprecedented prosperity favoured the industry, and consequently gave a good opportunity to enterprisers as well as to workers to obtain experience and technical knowledge which otherwise could not have been gained so quickly. At first, several new factories were constructed to meet the demands of Russian orders for ammunition at the beginning of the War.

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The development of shipbuilding, as described in the following chapter, created a boom in the engineering industry because of the demand for engines, boilers and machinery, while the general demands on production increased the country's requirements in industrial machinery. Owing to the rapid development of textile industries and also to the difficulty of importing machinery, great scope was given to the engineering industry for rapid expansion. Furthermore, electric, gas and mine machinery, railway tracks and carriages, bicycles, motor-cars and also aeroplanes were successfully constructed during the War, owing to the lack of foreign goods and to large home as well as foreign demand for these goods. However, when the War came to an end and was succeeded by world-wide depression, the industry was at once plunged into terrible financial confusion. Those firms which supplied war time necessities such as arms and ammunition and the shipbuilding industry with its complementary engineering industries were directly affected. On the contrary, those concerned in manufacturing electric machines, tracks, vehicles and engines for fishing boats and aeroplanes, were hardly affected and have been actively engaged ever since the War. The most striking fact which we must not overlook is the continuous activity of those engaged in manufacturing hydro electric machines and their accessories, which shows the recent development of electric enterprise in Japan.

The general state of the machine manufacturing industry in Japan can be seen in the following tables :

GENERAL ASPECTS OF ENGINEERING (1921)

Companies engaging in :	No of		No. of		H.P. of	Value of
	Ltd. Cos.	Others.	Factories.	Workers.	Engines Used.	Output (Yen 1,000).
Railway tracks	8	3	14	9,500	18,688	48,042
Motor-car and bicycles	17	6	44	3,500	2,144	11,236
Electric machines	51	4	75	17,100	12,286	85,958
Machines for general manufacture	38	12	80	6,700	837	9,562
Motors	71	11	126	15,360	10,131	49,762
Machines for mining	11	—	15	1,450	2,360	4,169
Scientific and chemical machines	14	4	30	6,740	1,587	19,136
Arms and ammunition	5	—	11	3,670	1,587	8,416
Other engineering works	13	4	25	4,360	2,477	14,379
Total (including others)	228	46	423	78,800	55,200	251,700

EXPORTS OF MACHINERY
(yen 1,000)

	Watches and Clocks.	Surgery Instruments.	Electric Machines.	Engines.
1898-1902	236	0	0	—
1903-1907	581	56	90	—
1908-1912	565	103	337	—
1913-1917	1,066	503	1,087	—
1918	1,827	1,375	3,984	—
1919	1,831	1,324	4,443	—
1920	1,359	1,053	5,211	—
1921	950	530	3,084	591
1922	1,421	387	3,027	918
1923	1,295	268	1,851	416

EXPORTS OF MACHINERY
(yen 1,000)

	Telephone Machines.	Textile Machinery.	Printing Machines.	Total.
1898-1902	0	0	57	769
1903-1907	49	101	204	3,783
1908-1912	59	186	187	4,367
1913-1917	287	1,001	165	32,885
1918	429	3,594	282	110,688
1919	630	3,393	273	37,169
1920	642	3,388	430	50,011
1921	118	4,431	427	25,145
1922	119	5,034	374	26,346
1923	156	3,801	218	17,909

(The total includes others.)

§ 2. ENGINES AND BOILERS

That branch of the engineering industry of Japan relating to manufacturing engines and boilers is of comparatively recent growth. On the occasion of the Industrial Exhibition in 1877, the first attempt was made by a few firms in Japan to exhibit engines of their own make. A steamship engine, exhibited by the Ishikawajima Shipbuilding Co., and electric motor by the Tokyo Electric Co. drew people's attention to the industry. After the Japanese-Chinese War the Government issued the Shipbuilding Encouragement Act. It aimed at fostering the industry indirectly. That clause which authorized a subsidy of 5 yen per ton on home-built ships equipped with home-built engines was especially helpful, and caused great efforts among shipbuilders in Japan to manufacture engines instead of importing them from European countries.

The period of the industry's greatest development took place after the Japanese-Russian War. Besides the Nagasaki

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and the Kobe dockyards of the Kawasaki Shipbuilding Co., which had been engaged in the engineering industry for a long time, several firms were established¹ after 1908 for the sole purpose of manufacturing engines.

At this time, however, the industry was in the first stage of development, and the firms' capacity of manufacturing engines was very limited, their highest records being 1,000 h.p. steam engines and 300 h.p. gas engines.

On the advent of the Great War, manufacturers built new factories and extended old ones, owing to the great increase of home demand created by the difficulty of importing foreign engines. In 1918, the number of workmen employed was 50,000, a striking figure compared with 988 in 1913. After the War the number of workmen was 13,000 in 1919 and 10,000 in 1920, and the number of factories in 1922 was 124. The principal factories in 1918 were as follows :

Factories.	Kinds of Manufactures.	Number of Workers.
Mitsubishi Nagasaki Dockyard Co.	Engines and boilers for steamships and pumps	13,500x
Mitsubishi Kobe Dockyard Co.	Ditto	6,800x
Kawasaki Shipbuilding Co.	Ditto	12,000x
Kawasaki Hyogo Branch	Engines for aeroplanes	6,700
Hidati Works, Ltd.	Pumps, engines, boilers and cranes	650
Niigata Iron Works	Oil engines	500
Kabata Factory	Ditto	
Engine Manufacturing Co., Ltd.	Gas engines	530
Ikegai Iron Works	Steam and oil engines, aeroplane engines	1280
Honshiba Factory		
Mitsubishi Naiyenkikai Ltd.	All kinds of engines	750
Kobe Seikoshō Ltd.	All kinds of engines	2,000
Electric Engine Manu. Co., Ltd.	Steam engines	650
Arakawa Works, Ltd.	Pumps and cranes	
Ebara Works, Ltd.	Steam engines	100

(Figures marked x include the number of workers of shipbuilding section.)

Thus, together with the increase of well-founded firms scientifically managed and equipped with up-to-date machinery, there has been great progress in technical knowledge, and the manufacture of all kinds of engines and their

Names of Firms.	Established.
Engine Manufacturing Co., Ltd.	1908
Arakawa Works, Ltd.	1908
Electric Engine Manu. Co., Ltd.	1910
Hidati Works, Ltd.	1912
Ebara Works, Ltd.	1912

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accessories has increased in a most remarkable way since the War. It must, however, be remembered that although the industry has shown such striking progress and has been able to supply medium low-class engines for home demand, it has not yet developed sufficiently to be able to supply the more powerful high-class ones, which are still being imported from foreign countries to meet the progressive demand of home industries. However, as the result of the present development, boilers, pumps and cranes, which were never exported from Japan before the War, are now being exported, although they are still on a small scale, and the industry has become the principal supplier of various kinds of engines and boilers, and of many other engineering products to various home factories. For instance, take the percentage of the number of engines and boilers at work in 1921. Those of home make average almost 80 per cent of the whole in use, while those imported only average 20 per cent, as shown below :

PERCENTAGE OF NUMBER OF BOILERS AND ENGINES AT WORK
(1921)

	Manufacturing Factories.	Mines.	Others.	Total.
Home makes	84	78	83	82
Foreign makes	16	22	17	18
Total	100	100	100	100

Of course, there are in existence a few prominent firms which have begun to produce the higher class engines, but the work has not yet proved successful, although it shows good workmanship, and is quite comparable to that of other countries. The steady increase of the import of boilers and engines shows that the more other enterprises are developed, the more demand there is for high-class machines, which are somewhat beyond the scope of the present engineering industry in Japan. (See table on page 219.)

Regarding the possibility of the future development of the industry, the question first depends upon how far the technical and scientific skill may be improved in the future, lack of which is the main defect of the industry at present compared with other countries. It

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is obvious that the industry needs advanced skill more than anything else. Secondly, owing to the insufficient outputs of iron and steel, the industry in Japan has to depend upon foreign materials, which unduly raises the cost of production. However, in the event of such skill being achieved, the other disadvantage could be lessened accordingly. Observing the fact that it has become self-supporting

IMPORTS OF BOILERS AND ENGINES (Yen 1,000)

	1913.	1916.	1919.	1920.	1921.	1922.	1923.
Steam boilers, parts and accessories	979	1,367	8,336	6,680	7,605	6,402	2,949
Fuel economizers	1,578	1,104	1,262	2,530	5,722	3,606	3,267
Locomotives and tenders	2,386	120	408	914	1,910	1,446	5,153
Steam turbines	63	29	836	1,701	2,292	1,051	498
Steam engines	569	232	540	491	391	120	140
Gas and oil engines	1,216	179	966	4,771	1,111	2,370	2,731
Water turbines and Pelton wheels	728	115	1,787	779	1,600	2,978	3,027
Dynamos, electric motors	3,659	391	5,245	6,080	9,664	11,947	10,834

as far as the production of middle and lower class goods is concerned, and that it has secured a sound foundation, the engineering industry in Japan may be expected to continue its development in the future should further technical and scientific skill be attained.

§ 3. ELECTRIC MACHINES

In Japan the first attempt in this line of production was made just before the Japanese-Chinese War. In 1892 the Sibaura Works, Ltd., the pioneer of the Japanese engineering works, began to manufacture electric machines. The Tokyo Electric Co., Ltd., which is considered the first firm to manufacture electric bulbs and their accessories, was established in 1896. Four years later a firm named the Nippon Electric Co., Ltd., was formed, and that was the beginning of the industry relating to electric communication instruments.

After the Japanese-Russian War the industry entered on its first progressive period with the rapid rise of electric supply enterprise to provide light, heat and fuel to all

modern establishments. At the time many firms were promoted, the leading ones being as follows :

Names.	Established.
Osaka Electric Bulb Manufacturing Co.	1907
Meiji Electric Co., Ltd.	1910
Hidati Works, Ltd.	1911
Osaka Electric Machine Manufacturing Co.	1911
Oki Electric Co., Ltd.	1912

Thus, at the end of July, 1914, when the Great War broke out, the number of factories engaged in this industry was twenty-six with an authorised capital of yen 14,500,000, of which the paid-up capital was yen 9,260,000, and the 5,300 workmen employed produced goods worth yen 8,500,000 a year. This showed the striking progress made in the short period from the commencement of the industry. However, judging from the fact that production at that time was limited to low-grade goods, 2,300 kilo volt in dynamos and 100 h.p. in electric motors being the utmost capacity, the manufacturing ability of the industry was still far behind what it is at present.

After the Great War the industry renewed its development, owing to the increasing demand for electric machines on account of great expansion of electric power supply. As a result of the progress of the home industry, the imports of these goods rapidly decreased. For instance, the imports of electric motors and dynamos were reduced to only yen 391,000 in 1916, as compared with yen 3,659,000 in 1913 ; and in 1917, although the value regained considerably, it still remained at yen 1,129,000, which is less than one-third of that of 1913. The same decrease occurred in the imports of telegraph and telephone machines. As a consequence, the industry in Japan enjoyed great briskness and encouraged the successive promotion of electric machine-making companies, of which the most prominent are :

Names.	Established.
Japan Electric Co., Ltd.	1917
Yasukawa Electric Machine Works, Ltd.	1917
Meidensha Ltd.	1917
Kawakita Electric Battery Co., Ltd.	1918
Uasa Storage Battery Co., Ltd.	1918
Mitsubishi Electric Machine Co., Ltd.	1919

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The above industrial expansion directly resulted in the increase of output of electric machines, i.e. yen 57,000,000 in 1918, yen 75,000,000 in 1919, yen 85,000,000 in 1920 and yen 80,000,000 in 1921, which corresponds roughly to ten times more than that of pre-war figures. At the end of 1921, the number of factories¹ figured at 120, which was about five times more than that of 1914.

Regarding kinds of products and industrial progress, a great change is bound to be witnessed. The higher class electric machines which it was absolutely impossible to manufacture, such as electric motors for weaving and spinning purposes, direct current motors for chemical use, those for electric tramways and cranes, electric furnaces, have been successfully manufactured in great quantities. Electric dynamos of more than 2,300 kilo volt had never been manufactured before the War, but now the industry has developed enough to make those up to 20,000 volt. Electric fans and bulbs, telephonic and telegraphic machines manufactured by home factories are meeting the sole home demand to the great satisfaction of consumers. Besides, the manufacturing of large electric condensers for the use mainly of submarines and railway engines has made great strides, with the aid of the Government, and these products are not inferior from a technical point of view to those of American and European manufactures.

As a result of the development, Japan has become all of a sudden an exporting² country of electric goods, China,

¹ Factories engaging in manufacture of:	Number of Factories.
General electric machines	64
Electric apparatus	30
Electric batteries	16
Electric machines for communication	10
Total	120

² EXPORTS OF MAIN ELECTRIC GOODS
(Yen 1,000)

Years.	Machine and Parts thereof.	Telephone Instruments and Parts thereof.
1914	452	16
1919	4,443	630
1920	5,211	642
1921	3,084	118
1922	3,027	119
1923	1,851	154

Kwangtung Province, India, Australia and Asiatic Russia being the principal customers.

However, it cannot be said that the present state of the industry has reached the stage of self-supplying standard in the case of electric motors, dynamos and heaters, which are still provided by foreign labour, and even for other general electric fixtures and apparatus of good quality Japan is still dependent on imports, although the goods of common class are practically provided by home manufacture. It can be seen, therefore, that the imports¹ of electric goods, despite the recent progress of the industry, have shown a steady increase, especially in electric motors and dynamos.

Having finished with the general investigation on the engineering industries, we come to the question as to whether the industries have a promising future. The first thing we have to consider is the lack or difficulty of obtaining materials, which has been repeatedly mentioned elsewhere as the fundamental and common disadvantage of Japanese industries. It is hardly possible that the material disadvantage can be overcome unless the iron and steel works in Japan progress to the same standard of other countries. However, the iron works have not proved themselves to be commercially successful, owing to the entire dependency on foreign supply of ore, despite the earnest aid of the Government, who consider it from a national point of view the most essential industry in Japan. Therefore, in order to make up for this disadvantage and to develop the industry, the main things required are improvement of working

¹ IMPORT OF MAIN ELECTRIC MANUFACTURES
(Yen 1,000)

Years.	Motors and Dynamos.	Telephone and Telegraph Machines and Others.
1914	2,843	71
1915	749	49
1916	834	60
1917	1,714	61
1918	3,546	91
1919	5,982	265
1920	6,764	587
1921	10,304	883
1922	12,824	1,359
1923	11,358	859

organization and skill. To make things clearer, we may point out :

1. Abolition of import duties on raw and unfinished materials of iron and steel is essential, as Japan has no sufficient home supplies.
2. Encouragement of technical research, modern appliances, better labour conditions.
3. Improvement of divisional system.
4. Consolidation of small factories and unification of working processes.

Especially would the electric industry be promising should the above considerations be taken into account, as the electric supply works are in great demand, and have developed immensely of late years and supply a great deal of electric necessities. It will soon be possible for home manufacturers to supply not only electric motors and engines to home consumers, but also general electric goods to Eastern countries, such as China, Asiatic Russia, Malay Peninsula, India and Australia.

CHAPTER VI

SHIPBUILDING INDUSTRY

BRIEF HISTORY

ONE of the most remarkable successes achieved by Japanese engineering enterprises is the progress of shipbuilding. Some fifty years ago junks and sailing vessels were the only productions of Japanese shipyards, in which at the present time dreadnought warships and first-class ocean boats are built.

The original ships of Japan were known by the name of Junks, and both in construction and size they were utterly unsuited for ocean service. With the opening of the country, the first step taken by the Government was to encourage the building and ownership of vessels of the Western type. Before describing the history it would be well to state the reason why the industry had remained absolutely undeveloped for so long a time in spite of the fact that Japan is an island and had frequent intercourse with various European countries. The reason for this was mainly the fact that for more than three hundred years strict restrictions had been imposed by the Shogunate Government upon shipbuilding and travelling from a policy of national isolation. The Japanese were then forbidden to leave their own country, and boats above 500 koku (about 50 tons) in capacity were not permitted to be built. This absurd policy entirely discouraged the progress of shipbuilding as well as of navigation.

In 1854, a year after the visit of the American Fleet to the Bay of Uruga, the Shogunate, recognising the necessity of a navy, decided to relax the restrictions in regard to the building of the larger sized vessels, and later encouraged the

building of models after the design of Western schooners. Before the Meiji Restoration—as already mentioned—shipbuilding had been confined to junks and sailing boats of small size, but with the advent of the new era a rapid development took place. Early in 1870 the Government promulgated regulations for shipping and instructed the people in the building of Western models. At this time, however, Japanese shipbuilding works were naturally unable to meet the constantly increasing requirements due to the sudden expansion of the country's maritime business, so that all the larger craft was bought from foreign shipyards. Although the number of foreign built steamers fell below that of home-built vessels after 1876, their tonnage continued to be much larger until 1878. Meantime, the Government issued a decree in 1875 prohibiting the building of ships of the Japanese type of a capacity of 500 koku and upwards, so as to encourage the building of the larger Western type steamers. Few private concerns were established, and the work actually carried on by the Government up to 1880. During this period the number¹ of home-built vessels gradually increased, but the average tonnage of steam vessels in 1880 hardly exceeded 80 tons.

As the maritime business gradually developed, shipyards under private ownership were successively established. For instance, Osaka Tekkosho Co. (Osaka Iron Works Co.) was formed in 1881, and the Ono Zosensho Co. (Ono Shipyard Co.) in 1883. The Government handed over the management of the Nagasaki Shipyard to the Mitsubishi Co. in 1884, and the Kobe Shipyard to the Kawasaki Co. in 1885, both of which had been under Government contro

¹ NUMBER AND GROSS TONNAGE OF SHIPS BUILT IN JAPAN
1873-1880

Years.	Steamships.		Sailing Ships.	
	Number.	Tonnage.	Number.	Tonnage.
1873	2	32	2	91
1874	3	64	—	—
1875	14	462	4	83
1876	8	146	11	639
1877	16	474	16	1,649
1878	25	912	51	5,204
1879	19	839	50	5,781
1880	40	3,186	146	10,889

since their establishment. At the same time, the other two Government shipyards, viz. Uraga and Ishikawa, changed hands, and shipbuilding in Japan, which had been entirely under State management before 1880, was undertaken by private enterprise from that year. Iron and steel ships, however, were not built in large numbers, the majority built during those years being wood and iron mixed. The first and most significant work that both the Nagasaki and Kawasaki shipyards turned out were the four steel vessels of large displacement, about 600 tons, in 1890. By this time the technical progress and business development of shipbuilding in Japan showed remarkable strides, it being possible to provide for any type of Western models for coastwise service; but the larger ocean vessels still had to be obtained from European countries.

In 1894, the Japanese-Chinese War broke out, and larger vessels were urgently needed for military purposes; but the conditions and circumstances in the Japanese shipyards were not then sufficiently developed to cope with the rush, and they were only able to meet the demand for repairs to the larger ones. The Mitsubishi's Nagasaki shipyard was the only one at that time able to construct large boats over 1,000 tons, and they succeeded in constructing the *Suma Maru* (1,160 tons), *Mayajima Maru* (1,592 tons) and the *Ryujin Maru* (2,691 tons). Meanwhile, business people connected with the industry made an appeal to the Government to formulate an adequate policy for the encouragement and protection of the shipbuilding industry after the war. In response to the united and earnest efforts of the shipbuilding companies the Government proposed the Shipbuilding Encouragement Act¹ before Parliament in 1896, which was passed and came into force in October of that year.

Greatly encouraged by this Act, several new shipbuilding companies were established. The Hakodate Dockyard Co., The Inoshima Dockyard Co. and The Toda Shipbuilding Co.

¹ The main points of the above Act were that the Government subsidized the shipyards yen 11 to 22 per ton, also yen 5 per horse-power of the engines constructed by the same shipyard.

were formed, and The Ishikawajima Shipbuilding Co. extended their works a few years after 1896. Apparently this Act was unsuccessful, as the number of ships built during 1896-1899¹ was fewer than expected, and companies showed a big deficit yearly, despite the Government subsidies, and the majority of ocean boats Japan required were still supplied by foreign shipyards.

Seeing the unexpected and unsuccessful result, the Government decided to alter the Navigation Encouragement Act,² which was promulgated in March, 1896, in order to foster home shipbuilding, which would allow for the taking of shipping companies' orders in home docks instead of handing them over to foreign shipyards. The main amendment was that a navigation subsidy was to be granted in full amount to home-built ships and only half to foreign built ones.

Soon after the new amendment came into force in October, 1899, the industry took a prosperous turn, and the number and tonnage of home-built ships³ increased rapidly, due, of course, to the adequate assistance given by the amendment of the Act. We must not, however, overlook the fact that

¹ The principal boats built during this period were the *Iyo Maru* (727 tons); *Tsukijima Maru*, *Hitachi Maru* (6,172 tons); *Daigen Maru* (1,694 tons); *Awa Maru* (6,133 tons):

² According to this Act any Japanese person or persons, trading companies whose partners were all Japanese subjects, owning registered steamships of iron or steel with a gross tonnage of 1,000 tons or upwards, and a minimum speed of ten knots or upwards per hour, and carrying on a regular service between Japan and foreign ports, may be granted a navigation subsidy depending upon the distance run by the vessels and their tonnage.

³ NUMBER AND GROSS TONNAGE OF SHIPS BUILT IN JAPAN (1881-1903).

Years.	Steamships.		Sailing Ships.	
	Number.	Tonnage.	Number.	Tonnage.
1881	33	2,097	107	9,477
1884	11	1,338	19	2,889
1887	18	1,440	23	1,633
1890	30	4,291	13	1,142
1893	26	2,349	4	432
1896	36	3,597	11	997
1899	53	18,157	216	20,342
1900	53	15,308	193	17,873
1901	71	31,829	202	20,259
1902	67	16,328	137	13,035
1903	65	33,612	124	9,925

the period between 1900-1904 was the turning point in the industrial progress and development of transport in Japan.

It is noteworthy that the shipbuilding industry during this period showed remarkable progress in skill and from a technical point of view. For instance, the *Hitachi Maru*, which was built in 1898 by the Mitsubishi Nagasaki Docks, was considered at that time an epoch-making production of Japanese industry, not only in respect of her tonnage, which was 6,172 tons—the largest displacement ever constructed in Japan—but also in her first-class workmanship, which was readily recognised to be equal to boats of all other shipbuilding countries. The boat was put in the regular European service of the Nippon Yusen Kaisha (Japan Mail Steamship Co.), and thereby introduced Japanese skill and progress in shipbuilding to other countries. The *Awa Maru* was built in 1899 and the *Nikko Maru* in 1903; the latter was considered to be the best and fastest passenger boat afloat, of 17.7 knots per hour, that Japan had ever built, although her tonnage was 5,538 tons—a trifle smaller than the former two. The *Ceylon Maru* (5,068 tons) was the largest cargo boat; but again, the two river boats built by the Osaka Iron Works were very successful for river navigation. The training boat *Taisei Maru* (2,287 tons), of the Mercantile Marine College, was a remarkable production, especially in respect of accommodation for training purposes.

With the passing of a few years, the Japanese-Russian War (1904-1905) broke out. During the war all ocean vessels were commandeered by the Government for military transport, and a successive purchase of big boats from abroad was made; a further shortage of ships was met by chartering foreign vessels. Thus shipping in Japan at the emergency period was an urgent necessity for the national welfare. Shipbuilding also showed steady progress, the total tonnage being 37,500 tons in 1904 as compared with 33,612 tons in the previous year. The figure of the former year would have been much larger if the industry had not been hampered by repairing so many damaged ships which were engaged in actual service. In any case, the demand for

ships encouraged shipbuilding companies to expand their works and increase their capital, which naturally brought about considerable development: this development¹ being most marked in 1908 and onwards. Of the many things which the war brought out in the industry, the most noticeable was the remarkable work turned out by private companies who had never before been engaged in the construction of men-of-war with the exception of torpedo boats. They turned out destroyers, gunboats and cruisers of great speed and size. As to mercantile vessels, the *Tamba Maru* (7,460 tons), which had the highest tonnage recorded, and the *Nikko Maru* of 17.7 knots were representative of those built before the war. After 1908, however, the construction of big ships was successively taking place, and the *Tenyo Maru* and *Chiyo Maru* were representative of the post-war production, both being 13,500 tons and running 20 knots, with complete structure and up-to-date accommodation which compared quite favourably with the productions of European countries. In 1909 the Navigation Encouragement Act was replaced by the Ocean Service Subvention Act, under which ships subsidized were limited to steel steamships with a gross tonnage of not less than 3,000 tons and a speed of not less than 12 knots, which aimed undoubtedly at the encouragement of the construction of large vessels with higher speed.

The Great War and the Industry.

With the advent of the Great War, the industry experienced an unprecedented boom, as was the case with many industries, and with the mushroom growth of new

Years.	Steamships.		Sailing Ships.	
	Number.	Tonnage.	Number.	Tonnage.
1904 . . .	114	37,500	119	11,257
1905 . . .	103	30,089	279	16,760
1906 . . .	90	35,151	411	26,444
1907 . . .	79	29,898	248	19,949
1908 . . .	93	72,757	197	14,958
1909 . . .	58	63,475	205	15,616
1910 . . .	77	24,479	147	11,097
1911 . . .	142	41,229	216	13,132
1912 . . .	168	48,155	372	23,899
1913 . . .	115	51,525	659	43,598

companies shipbuilding in Japan showed an all-of-a-sudden increase.¹

Before the War the number of shipbuilding works equipped for the construction of ships of not less than 1,000 tons was no more than six, with 26,000 workers. However, during the period of the War these figures increased nine times in the number of works and four times in the number of workers, and all other parts of the industry accordingly made rapid strides.

As a consequence the total tonnage of ships built during the War reached surprisingly high figures² every year, rising from 190,000 tons (including sailing boats) in 1916 to 486,000 tons in 1917, and 697,000 tons in 1918. It is also noteworthy that the percentage between steamships and sailing boats showed a remarkable change, that for the former jumping to 90 per cent in 1918, as against only 54 per cent before the War. Thus it is obvious that the average tonnage of ships built during the War was much higher than the pre-war figure, the main reason for this being undoubtedly the development and expansion of Japanese shipping and navigation, which extended not only to the Eastern seas but to every port of the world.

The sudden increase during the last two years was largely

¹ SHIPBUILDING BEFORE AND AFTER THE WAR

	1913 (End of the Year).	1918 (Directly after the Armistice).
Companies	5	52
Capital—Authorized (yen 1,000)	25,550	163,050
" Paid up	23,150	109,554
Debentures	3,600	22,050
Shipbuilding factories	6	57
Shipbuilding docks	17	157
Workmen	26,139	107,250

NOTE.—The above table includes only those able to build ships of not less than 1,000 tons, and workers are only those who enlisted in the workers' name list; therefore there is a slight difference between the figures given and those for the whole industry.

² SHIPBUILDING DURING THE WAR

Years.	Steamships.		Sailing Boats.	
	Number.	Tonnage.	Number.	Tonnage.
1914	79	82,873	557	34,528
1915	63	51,431	411	26,024
1916	94	144,240	519	45,831
1917	196	403,016	526	83,092
1918	377	626,695	413	70,372

due to war time orders from America under the agreement by which America supplied the material and Japan built the ships. During these years 45 ships (tonnage 394,100) were exported to America at a cost of yen 150,105,000. This alone shows that the shipbuilding industry in Japan has prominently progressed and matured to the standard of other shipbuilding countries.

After the War.

The unprecedented boom during the War was, of course, brought about by the abnormal state of world economic activities, and a reactionary depression in this industry, as in others, was perfectly unavoidable and only to be expected. As will be seen from the following table, the number of shipbuilding companies in June, 1921, was 21, showing a decrease of 32, or 61.5 per cent, as compared with the number just before the Armistice; the figures for the number of factories, docks and workmen also show a tremendous decrease corresponding to that in the number of companies.

	1918 (Directly After the Armistice).	1921 (June).	Decrease (-). Increase (x).
Companies	52	21	32 (-)
Capital—Authorized (yen 1,000)	163,050	204,000	40,950 (x)
" Paid-up (yen 1,000)	109,554	127,880	18,326 (x)
Debentures (yen 1,000)	22,050	28,470	6,420 (x)
Factories	57	27	30 (-)
Docks	157	94	63 (-)
Workmen	107,250	72,893	34,367 (-)

The industry, being in such a depressed state, was aided by construction orders from the Navy, which was now working on the new plan of the naval fleet. However, expectations were not realised, and orders had to be cut down in accordance with the Disarmament Treaty of Washington. Thus, the tonnage¹ of newly built ships after

¹ SHIPBUILDING AFTER THE WAR
(Steamships of more than 1,000 tons)

Years.	Steamers.		Sailing Vessels.	
	Number.	Tonnage.	Number.	Tonnage.
1919 . . .	190	646,344	166	28,135
1920 . . .	146	452,688	52	7,420
1921 . . .	56	201,714	11	1,541

the War rapidly decreased year by year, falling from 674,500 tons in 1919 to 460,000 tons in 1920, and 203,000 tons in 1921. It is quite obvious that the reason why the year 1921 still showed large figures in spite of the chaotic state of the industry was mainly the fact that shipbuilding orders placed during the boom were now brought forward, and the companies had to proceed with the work in order to prevent unemployment. Apart from this consideration the actual figures might have been much less than given above.

As a consequence, companies established during the War closed down in succession, and those able to hold on during this hopeless period were the older established and well-founded companies, such as the Kawasaki Shipbuilding Co., Mitsubishi Shipbuilding Co., Osaka Iron Works, Uraga Dock Co., Yokohama Dock Co. and the Ishikawajima Shipbuilding Co., which are the leading establishments in Japan at present. In regard to the present shipbuilding capacity of Japan the *Oriental Economist* gives an estimate of about 560,000 tons a year, which is five times the pre-war figure. Against this advanced capacity the present yearly demand for new ships taken together with casualties and worn-out ships can hardly be calculated at more than 300,000 tons when normal conditions in Japanese navigation are restored. Therefore, if we take home production and demand apart from foreign competition and orders, the present state of the industry undoubtedly reveals considerable over-expansion, and the conclusion we must come to is that the industry will remain in the present depressed state so long as it is dependent only upon home demands.

In regard to the question of obtaining foreign orders, the industry in Japan has still to meet with many disadvantages, not only from the point of view of technical skill, but particularly of the raw material supply, the position regarding which is precisely the same as it was fifty years ago.

Disadvantages of Japanese Shipbuilding Industry.

In regard to the supply of shipbuilding material¹—especially steel manufactures—the industry has mainly depended upon imports which account for between 70 per cent and 90 per cent of the total yearly amount of material used in Japan. This means that home manufactures can only provide for from 10 per cent to 30 per cent, due to the fact that iron and steel are not obtainable in large quantities owing to the scanty output of iron in Japan. The greater part of the material required was imported from England, Belgium and Germany before the War, and since then America has been the chief supplier. Therefore, although shipbuilding material has been exempt from the payment of customs duties, the industry has to make use of more expensive goods on account of the cost of freight, insurance and other transport charges. Again, it has to lose interest on capital which is used for buying material for storing purposes, which is necessary, owing to the inability to obtain stocks instantly; expenses of storing must also be taken into account, as well as the element of risk which enters into the buying of large quantities of goods at one time for use at some future date. For these reasons the costs of shipbuilding in Japan are naturally higher than in other countries.

The next difficulty is the backward state of technical skill. Although during the last ten years great strides have been made, the efficiency of Japanese workmen is still low, as compared with the standard of foreign shipbuilding

¹ HOME SUPPLY AND IMPORT OF SHIPBUILDING MATERIAL IN JAPAN

Years.	Home Supply (Tons).	Per Cent.	Import (Tons).	Per Cent.
1910	2,500	17·6	11,650	82·4
1911	5,000	29·1	17,160	70·9
1912	5,000	19·6	20,670	80·4
1913	6,000	22·3	20,960	77·7
1914	10,000	22·7	34,190	77·3
1915	10,000	23·4	31,730	76·6
1916	15,000	20·0	60,210	80·0
1917	20,000	13·4	129,020	86·6
1918	20,000	8·6	233,500	91·4
1919	30,000	11·1	240,956	88·9

countries. If representative companies in England and Japan are compared, it will be seen that the English workmen are far superior to the Japanese in respect of skill and efficiency.

These stated facts are not all that has to be contended with in Japanese shipbuilding. It is not only the comparative expensiveness of machinery and other instruments necessary to the industry, but also the high rate of interest on capital invested, which is another factor contributing to the high cost of production. In spite of these disadvantages, those responsible for the conduct of the industry used the vast profits which had accumulated during the War on reckless expansion of establishments, investing money in property and buildings instead of trying to remove these disadvantages by definite and systematic research for the improvement of the industry. This undoubtedly caused the post-war depression to be more unfavourable than it might otherwise have been.

In connection with the industrial disadvantage we must not overlook the effects of the subsidizing policy which the Japanese Government had in favour of shipbuilding. We have mentioned elsewhere the Shipbuilding Encouragement Act of 1896 and the Navigation Encouragement Amendment Act of 1899, which came to an end in 1918. In the place of this Amendment Act the Government decided to rescind the duties on imported shipbuilding material in 1921, but heavy duties¹ have been imposed on the importation of ships of foreign manufacture.

What are the effects which these Acts have had on the industry? From the date when the latter Act came into force until just before the Great War the total tonnage of Japanese ships increased by 1,300,000 tons during these sixteen years, an increase of 57·3 per cent as compared with the year when the Act was passed. During this period the newly built ships which were aided by the subsidies were only 223,500 tons, or 17·2 per cent of the above total increase. On the contrary, ships which received allowance in

¹ Fifteen yen per ton for ships aged less than ten years and ten yen for ships more than ten years old.

accordance with the Act since the War registered more than 620,000 tons. However, this rapid increase was not due to the Act, but mainly to the abnormal state of prosperity throughout the whole economic world. It is quite true that this high record could easily have been established without the shipbuilding subsidy, as the enormous profits earned by the companies during the War enabled them to pay exorbitant dividends to shareholders ranging from 100 per cent to 200 per cent. If we take the total of money¹ paid under the Acts it amounts to yen 22,757,500 since 1896. Not only this, but the country in general has paid as an indirect result of the protective policy a vast amount in import duties on foreign ships purchased.

In conclusion, we may state that the protective policy which the Government have carried out since 1896 has not been so effective as was expected, compared with the vast burden which the country has shared, although it cannot be denied that the industry has sufficiently advanced to support itself apart from the supply of material. The policy seems to have succeeded in preserving high dividends for the companies rather than its original purpose of encouraging the industry. Therefore, the difficulties of the industry are still unsurmounted. In order to encourage the industry it is necessary for the companies in the first place to take the most adequate steps in connection with the improvement of the organisation and technical knowledge regarding the shipbuilding industry.

¹ SUBSIDY IN THE SHIPBUILDING INDUSTRY

Years.	Tonnage of Ships Projected.	Tonnage of Ships Built.	Amount of Subsidy Paid. (Yen.)
1896-1903 . . .	103,597	83,962	1,628,942
1904-1913 . . .	371,741	275,291	7,162,496
1914-1918 . . .	1,489,361	619,093	13,966,057
Total . . .	1,964,699	978,346	22,757,495

CHAPTER VII

TRANSPORT

§ I. SHIPPING

Outline of Shipping Development up to the End of the Great War.

ENCOURAGED by the geographical position and formation of the country together with the general industrial development, Japan has displayed great progress in her maritime industry in a comparatively short period since the Meiji Restoration (1868). However, apart from quality and construction of ships and their displacement, the total tonnage which Japan possesses at present is only 6.2 per cent of the world's total in 1924, although she is the third in position among shipping countries, coming next to England and America, and above France, Germany, Norway and other maritime countries, merely from the tonnage point of view.

If we go back several centuries before the seclusion policy of the Tokugawa Shogun Government, who put a stop after 1637 to all overseas attempts of the Japanese navigators, Japanese seamen were to be found all along the coast of China, Siam, the Philippines, the South Sea Islands and even as far as India and Australia. At this time they were known by the name of "Wakoo," and were rivals to the Spanish and Dutch navigators, who at that period were having a glorious time in the West. The seclusion policy which was strictly kept up by the Shoguns for more than 200 years after 1637, stopped the development of ocean intercourse altogether and isolated Japan. Soon after a visit was made by the American Commander Perry, however, the ban was removed, and the country was open to foreign intercourse in 1858. Since then Japanese shipping

has made steady and successful progress, and has secured not only the greatest power in Oriental waters, but her mercantile vessels steam all the ocean routes of the world.

From the modern shipping point of view, the first shipping company established was the "Kaiso Kaisha" (Transport Co., Ltd.), which was formed in 1870, under half Government and half private management. The most interesting point is that one of the articles of the company's regulations points out that ". . . irrespective of the Samurai (professional fighting class), Hyakusho (farmers), Chonin (merchants) and women, any persons are permitted to be given facilities at their request for freights and passages, provided that they apply to the agents for same." This article shows the typical atmosphere of the general idea in the seventies, which was still in the transition stage from the olden Japanese feudal to modern ideas, although social privileges conferred on the Samurai class had been removed and equality had been established socially and officially, irrespective of class or sex.

Two years after the Government allowed the company special subsidies and increased the number of chartered boats. The company then altered their name to the Imperial Japanese Mail Steamship Co., Ltd. However, as this company could not cope with the military transport on the occasion of the Formosan War in 1874, the Government ordered the Mitsubishi Steamship Co., which had been formed soon after the former company, to take over the service of military transport and lent them vessels bought from abroad. After the war the latter expanded its business to a great extent by amalgamating with the former, and by getting a grant which enabled it to use another ten Government vessels. Thus, Japanese sea transport made great headway after the Formosan War.

NUMBER AND TONNAGE OF SHIPS BEFORE AND AFTER THE FORMOSAN WAR (1874)

Years.	Steamships.		Sailing Ships.	
	Number.	Tonnage.	Number.	Tonnage.
1873 . . .	110	26,000	36	8,000
1875 . . .	149	42,000	44	9,000
Increase . . .	39	16,000	8	1,000

A few years after the Civil War (Satsuma Rebellion) of 1877, shipping business made again a gradual rise and progress; new companies were formed in quick succession with the aid of the Government. In 1883 three companies, Hokkaido Unyu Kaisha, Echu Fuhansen Kaisha and Tokio Fuhansen Kaisha, all of which had been in existence, agreed to co-operate in order to form a new amalgamated company under the guidance of the Government. Kioto Unyu Kaisha (United Transport Co., Ltd.) was thus established with a capital of yen 6,000,000, of which yen 2,000,000 was invested by the Government. In the following year the Osaka Shosen Kaisha (Osaka Mercantile Steamship Co., Ltd.) was incorporated by several private shipowners in the Osaka district. The Nippon Yusen Kaisha (Japan Mail Steamship Co., Ltd.), which is not only the largest shipping company in Japan, but also one of the leading companies in the world at the present day, was formed in 1885, amalgamating with the Mitsubishi Steamship Co. and the United Transport Co., with a capital of yen 11,000,000, having had the Government guarantee of 8 per cent dividend a year.

Though Japanese navigation showed gradual development, its actual activity was still limited along the coast of Korea and China, and almost all Japanese foreign trade was borne by foreign vessels. It was not until November, 1885, that Japan started ocean navigation, when the Nippon Yusen Kaisha commenced its first ocean route as far as Bombay.

On the outbreak of the war with China (1894-1895), the Government commandeered all ships owned by private companies and individuals for the purpose of military transport. They were, however, insufficient for the urgent demand, and consequently were supplemented by heavy purchases of foreign ships. As a result, the gross tonnage of ships after the war was greatly increased as compared with the pre-war figures.

NUMBER AND TONNAGE OF STEAMSHIPS BEFORE AND AFTER
THE WAR WITH CHINA (1894-95)

Years.	Number.	Tonnage.
1894 . . .	65	96,504
1895 . . .	147	164,454
Increase . . .	82	67,950

It is needless to add that the development of Japanese shipping has been largely due to the subsidies and encouragement of the Government. After the war with China the Government adopted an extensive shipping policy in order to cope with the post-war development of industries and foreign trade. The Navigation Law of March, 1896, was issued, which granted general subsidies to all owners of steamers engaged in service in conformity with the provisions of the law, which was modelled on the French subsidy system. This law was designed both to protect the infant merchant service from foreign competition and to encourage the shipbuilding industry at home. Soon after the law came into force, several new ocean lines were opened by respective firms, the main routes of which were as follows :

- European Line (Yokohama-London-Antwerp via Suez). By Nippon Yusen Kaisha.
- South American Line. By Nippon Yusen Kaisha.
- North American Line (Yokohama-Seattle). By Nippon Yusen Kaisha.
- Australian Line (Yokohama-Sydney). By Nippon Yusen Kaisha.
- San Francisco Line (Yokohama-San Francisco). By Toyo Kisen Kaisha (Est. 1896).
- Yangtse River Line (Osaka-various ports along the Yangtse River in China). By Osaka Shosen Kaisha.
- Shanghai Hangchow Line. By Daito Kisen Kaisha.
- Shanghai Soochow Line. By Daito Kisen Kaisha.

Thus, the principal lines to the Western and Eastern Continents were established with the aid of the Government; and shipping transport started its activity. On the advent of the war with Russia, as in the case of the previous war, great demand was made on sea transport, which resulted in heavy importation of ships, and also stimulated the home shipbuilding industry. Therefore, despite the loss of ships during the war, the gross tonnage¹ was considerably increased.

¹ NUMBER AND TONNAGE OF STEAMSHIPS
BEFORE AND AFTER THE WAR WITH RUSSIA (1904-05)

Years.	Number.	Tonnage.
1903	1,570	662,986
1904	1,815	797,953
1905	1,988	939,462
1906	2,103	1,116,945

After the war several new lines¹ were opened in addition to the principal ones already established.

The Nisshin Kisen Kaisha (China-Japan Steamship Co., Ltd.) was established in 1907, for the purpose of operating all lines along the Yangtse River and various ports in Central China.

The Japanese shipping circle was again greatly stimulated on the advent of the Great War, owing to the rapid rise of freightage,² chartering cost³ and price of ships.⁴ The rapid rise of freightage and charterage was due to the world War. The gross tonnage of ships commandeered by

- ¹ South Sea (Osaka-Sourabaya) Line. Opened in 1912 by Nanyo Yusen Kaisha (Est. 1912).
Saghalen Line. Opened in 1906 by Nippon Yusen Kaisha.
Dairen Line. Opened in 1906 by Osaka Shosen Kaisha.
Tsuruga Vladivostock Line. Opened in 1907 by Osaka Shosen Kaisha.
Chosen Coasting Line. Opened in 1912 by Chosen Yusen Kaisha (Est. 1912).
North China Line (Taku-Dairen). Opened in 1912 by Osaka Shosen Kaisha.
North American Tacoma Line. Opened in 1909 by Osaka Shosen Kaisha.

² FREIGHTAGE DURING THE WAR

Coast rate (ton of coal from Moji to Yokohama) :

Years.	Maximum (Yen).	Minimum (Yen).	Average (Yen).
1913	1·850	0·695	1·063
1914	0·967	0·587	0·771
1918	10·930	6·870	8·350

Ocean rate (ton of goods) :

	Pre-war.	Maximum During the War.	End of 1918.
European Line (shilling)	50	800	600
North American Line (dollar)	6·50	43	25
Australian Line (shilling)	20	280	220
Bombay Line (yen)	2	80	65
Calcutta Line (yen)	2	60	60

³ CHARTERAGE DURING THE WAR (per ton)

	Pre-war (Yen).	Maximum During the War. (Yen).	End of 1918. (Yen).
Large ships (over 5,000 tons)	—	47	30·33
Medium „ (3,000—5,000 tons)	1·50	39	28·50
Small „ (under 3,000 tons)	—	28	21·50

⁴ PRICE OF SHIPS DURING THE WAR

	Pre-war (Yen).	Maximum During the War (Yen).
New ship (per ton)	90	1,000
Old „ „ „	45	800

the Allied Governments for military transport totalled approximately 23,000,000 tons. The German submarine attack and other causes connected with the War accounted for a loss of about 11,855,000 tons. For those reasons the tonnage and number of ships during the War available for commercial use were greatly decreased, and the pre-war shipping routes were seriously disorganized soon after the War commenced. It was therefore quite natural that freightage and charterage rose to a great extent. As a consequence, an unprecedented boom occurred in Japanese shipping circles, and the ocean routes were rapidly extended to almost all parts of the world.

Meantime, the Government paid not only great attention to the development of Japanese shipping, but also strengthened the Navigation Encouragement Act for the purpose of securing a solid foundation for future shipping competition. As a result several new fixed lines¹ were established by the aid of the Government during the War. At the same time shipping companies operated many lines² on their own account without the Government subsidies.

¹ NEW LINES SUBSIDIZED BY THE GOVERNMENT

South American Line (Kobe-Buenos Aires, via Shanghai, Singapore, Colombo and Cape Town)	Osaka Shosen Kaisha.
Java-Bangkok Line	" " "
Shanghai-Canton Line	Nisshin Kisen "
Woochang-Chungking Line	" " "
Chosen Western Coast Line	Chosen Yusen "
Vladivostock-Chosen Line	Hokuriku Kisen "
Nicolisk Line	Kitanihon Kisen Kaisha.
Kamchatka Line	Kurihara Shosen "
South Seas Line	Yamashita Kisen "
Marshal Islands Line	Nippon Yusen "
Tsingtao Line	" " "

² PRIVATE LINES WITHOUT SUBSIDIES

Yokohama-Liverpool Line	Nippon Yusen Kaisha.
" Hamburg Line	" " "
" New York " (via Panama)	Osaka Shosen "
" " " " " " "	Nippon Yusen "
Calcutta-New York " " " " "	" " "
Australian Line	Osaka Shosen "
South American Line (Yokohama-South American ports along the East Coast, via Singapore, Colombo and Cape Town)	Nippon Yusen "
Japan-Java-Calcutta Line	" " "

This remarkable development was attained through the Government's adequate policy of encouragement and the enormous activity of shipping companies, which was, of course, stimulated by war time briskness. Thus, Japanese ships greatly increased in number as well as in gross tonnage,¹ which was registered respectively at 47,710 and 4,221,000 tons at the end of 1919.

After the War.

At the end of the War there followed the world economic depression, and the shipping world in Japan suffered considerably, owing to the rapid drop of freightage,² chartering cost³ and price⁴ of ships, the reasons of which may be enumerated as follows :

- (a) Completion of foreign ships which were under construction during the War.
- (b) Foreign countries' reorganisation of shipping transport which was disturbed during the War.
- (c) Release of ships under war service.

¹ NUMBER AND TONNAGE OF SHIPS BEFORE AND AFTER THE GREAT WAR

Years.	Steamships.		Sailing Ships.		Total.	
	Number.	Tonnage.	Number.	Tonnage.	Number.	Tonnage.
1913	3,286	1,528,000	32,527	828,000	35,813	2,356,000
1918	4,755	2,337,000	39,497	1,260,000	44,252	3,603,000
1919	5,203	2,870,000	42,507	1,351,000	47,710	4,221,000

² OCEAN FREIGHTAGE AFTER THE WAR (PER TON OF GOODS) (Highest)

	1918. (Yen).	1921. (Yen).
European Line (shilling)	800	75
American Line (dollar)	43	10
Australian Line (shilling)	280	60
Bombay Line (yen)	80	21
Calcutta Line (yen)	60	14

³ CHARTERAGE AFTER THE WAR (END OF EACH YEAR) (Yen per ton)

	1918.	1920.	1921.	1922.	1923.
Large ships (over 5,000 tons)	47.00	5.00	3.00	—	2.30
Medium „ (3,000-5,000 tons)	39.00	2.25	2.50	2.50	2.70
Small „ (under 3,000 tons)	28.00	3.05	3.00	2.95	3.30

⁴ PRICE OF SHIPS AFTER THE WAR (YEN PER TON)

	1918.	1921.	1922.
New ships	1,000	120	100
Old ships	800	60	50

Thus, owing to the adverse state of shipping, which was made worse by the rapid decrease of freights, the ship-owners were put in great financial difficulties, which caused many of them to go into liquidation. Take, for instance, the case of the Nippon Yusen Kaisha, which only managed to show a profit of yen 2,990,000 (27 per cent per the total paid-up capital) on the balance sheet of 1913. This sum included Government subsidy of yen 2,433,200. However, at the height of the war boom at the end of 1918 an enormous profit was realised corresponding roughly to 215 per cent of the paid-up capital. Soon after the War was over, the business of the company underwent an unfavourable change, and the percentage of profit dropped to 9 per cent, which even then could not have been attained if the Government subsidy, income from other sources and miscellaneous items and also from reserve fund had not been taken into account. It is therefore perfectly clear that without these extra incomes the direct revenue from shipping business would not have covered the expenses of the year during the post-war depressive period. We may observe the same fact in the balance sheet of the Osaka Shosen Kaisha and the Toyo Kisen Kaisha. The above three are commonly known as the biggest subsidized companies in Japan.

The most noticeable thing in Japanese shipping after the War ended is that it has had to face keen foreign competition in the Pacific Ocean, owing to the phenomenal activity of the American fleet and the strong recovery of British navigation as well as to the new establishment of Canadian luxurious vessels in the Pacific. Consequently, the Toyo Kisen Kaisha has suffered a great deal on its Pacific lines, and even the Nippon Yusen Kaisha had to remove its larger vessels from the Pacific service to European routes, and smaller ones are doing duty on Japan-American lines. It is obvious that other smaller companies and individual shipowners who were not members of the shipping freight league and without any material assistance from the Government, were experiencing a more difficult time. Before the War the tonnage owned by these unsubsidized smaller companies and private ship-owners was about 1,647,000 tons (including sailing vessels),

or 72 per cent of the total tonnage at the end of 1913. They were mostly engaged in coast navigation, as foreign ships were barred from coasting on account of home ships. The advent of the Great War gave them opportunities to extend their operations to ocean trade, with the advantage of being more free than the subsidized companies, whose routes were generally regulated by the Government. But as soon as the War ended, the smaller companies were placed in a chaotic state, owing to the fact that, first, they had bought larger ships at the top of high price and recklessly inflated business during the War; secondly, there was keen competition from both the subsidized companies and foreign ships; thirdly, the cost of ships in possession of smaller companies was much higher than those of bigger ones. On this occasion an amalgamation movement was discussed by those smaller companies for the purpose of solving the difficult situation. The movement was not, however, taken up, owing to the difficulties experienced in estimating the financial status of the various companies. Another move was then made to organize a league by which ships could be held up according to mutual negotiations for the purpose of preventing freight charges going down. This was again unsuccessful, as the shipowners concerned could not agree as to their interests involved. The Government at this time urged them to carry on the negotiations with the object of amalgamating several of the unsubsidized companies operating at a loss. The Kokusai Kisen Kaisha and the Toyo Kisen Kaisha acted as the principal promoters in this matter, which came to nought with the exception of the fact that five minor companies, viz. the Yamashita, Kokusai, Katsuda, Kawasaki and Teikoku, formed a charter pool. However, the pool has fallen through, as many owners were not loyal to the agreement, but made secret rebates. At the end of 1923 about 90,000 tons under the Japanese flag were lying idle. Thus, both the subsidized and unsubsidized companies have been experiencing a very hard time since the War.

Displacement and Age of Ships.

The gross tonnage of Japanese ships reached almost to 4,500,000 tons at the end of 1922, including sailing vessels and those registered in the colonies of Japan. It is interesting to observe that this great increase took place through the four distinct periods commencing from the Japanese-Chinese War.

INCREASE OF TONNAGE OF SHIPS

Years.	Steamships.	Sailing Ships.	Total.
1873	26,000	8,000	34,000
1894 (Japanese-Chinese War)	96,500	45,000	141,500
1904 (Japanese-Russian War)	797,000	327,000	1,124,000
1913	1,528,000	828,000	2,356,000
1922 ¹	3,241,300	961,000	4,202,300

Taking the figure of 1922, we may make the following table according to ships' displacement. The ships of more than 1,000 tons were 796 in number and 2,915,000 in total tonnage of steamships, of which 1,370,000 tons were held by 223 large ships of more than 5,000 tons. This fact shows that the shipping of Japan has developed of late from coasting to ocean navigation. More precise figures can be seen in the second table, which shows that the total tonnage of ships between 5,000 and 10,000 tons held the largest percentage :

CLASSIFICATION OF SHIPS ACCORDING TO DISPLACEMENT
(1922)

Steamships.	Number.	Gross Tonnage.
Over 20 tons and under 1,000 tons	2,200	425,500
Over 1,000 tons and under 5,000 tons	573	1,445,450
Over 5,000 tons and under 10,000 tons	213	1,253,000
Over 10,000 tons	10	117,350
Total	2,996	3,241,300
Sailing Ships.		
Over 20 tons and under 1,000 tons	14,806	957,300
Over 1,000 tons	2	3,700
Total	14,808	961,000
Gross total	17,804	4,202,300

¹ In addition there were 295,400 tons of ships registered in the colonies.

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PERCENTAGE ACCORDING TO DISPLACEMENT
(Steamships)

	1903.	1913.	1922.
Under 20 tons	0.8	0.8	0.5
20 tons and under 500 tons	15.1	11.4	5.9
500 tons and under 1,000 tons	7.5	6.4	6.6
1,000 tons and under 2,000 tons	19.0	12.7	11.9
2,000 tons and under 5,000 tons	37.2	43.8	32.9
5,000 tons and under 10,000 tons	20.1	21.1	38.6
Over 10,000 tons	0.3	3.8	3.6
Total	100.0	100.0	100.0

In order to observe the precise state of the development of shipping, we must not overlook the construction of ships and their age, which are most indispensable in regard to the investigation of navigation power. According to the following tables, ships built of steel and iron are on the increase, which shows undoubtedly that the recent development of Japanese shipping is in a satisfactory way.

NUMBER OF STEAMSHIPS CLASSIFIED BY MATERIAL USED

	Steel and Iron.	Wooden.	Mixed.
1903	309	758	21
1913	896	1,162	15
1922	1,344	1,641	11

NUMBER OF STEAMSHIPS CLASSIFIED BY AGE

	1903.	1913.	1922.
Age under 5 years	67	242	1,152
Age 5 and under 10 years	60	135	433
Over 10 and under 15	38	108	315
Over 15 and under 20	41	101	338
Over 20 and under 25	41	98	245
Over 25 and under 30	12	80	106
Over 30	31	90	227

(Excluding the number of those of unknown age.)

*Shipping and Foreign Trade.*¹

The increase of newer ships and their improvement in construction have considerably raised Japan's shipping capacity, and consequently afforded greater facilities to her foreign trade. Before the war with China, Japanese vessels carried only 7 per cent of the nation's exports and no more than 8.7 per cent of its imports. But ten years after the Japanese-Russian War these percentages rapidly increased, and to-day most of the country's trade is carried by Japanese vessels. In 1918 the total value of imports and exports carried to and from by Japanese ships was yen 3,114,246,000, or 87.9 per cent out of the total value of Japan's foreign trade. Although this has since slightly decreased, owing to recovery of foreign shipping, the percentages which Japanese ships carried in 1921 were 77.2 and 71.8 in exports and imports respectively. Meanwhile, Japanese ships² in connection with the foreign trade held 80.8 per cent of the total tonnage of those which entered the port or ports of

¹ PERCENTAGE OF THE VALUE OF FOREIGN TRADE CARRIED BY SHIPS OF VARIOUS COUNTRIES

		Japan.	Great Britain.	France.	U.S.A.	Germany.
1893	Exports	7.0	52.3	16.4	10.0	12.0
	Imports	8.7	62.8	8.3	1.5	15.5
1903	Exports	40.0	30.8	5.5	5.9	14.2
	Imports	34.4	41.9	2.5	2.6	12.2
1913	Exports	51.9	24.3	6.6	7.0	8.2
	Imports	46.6	32.2	1.3	4.0	8.8
1918	Exports	88.7	4.7	0.9	0.6	—
	Imports	87.1	5.1	0.1	1.0	—
1921	Exports	77.2	15.8	1.1	3.6	—
	Imports	71.8	18.2	0.4	6.6	—

² TONNAGE AND NATIONALITY OF SHIPS WITH CARGOES THAT ENTERED JAPAN (1,000 TONS)

	1893.	1903.	1913.	1918.	1921.
Japan	318	5,131	12,530	14,361	19,305
Great Britain	1,258	4,127	7,228	1,348	4,900
France	59	213	412	59	329
Netherlands	10	172	180	719	515
Russia	58	355	723	521	30
Germany	268	1,268	1,679	—	—
U.S.A.	87	961	1,331	383	2,528
Total (including others)	2,214	13,419	24,659	17,772	27,931
Japan's percentage	14.4	38.2	50.8	80.8	69.1

Japanese territories in 1918, and the tonnage of ships which cleared was approximately the same as entered. This was a great increase compared with 14.4 per cent in 1893, 38.2 in 1903 and 50.8 in 1913.

Japan's Position as a Maritime Country.

In the first place, the tonnage¹ of ships which Japan possesses amounts to only 6.2 per cent of the world total tonnage at the end of 1924, although she has made remarkable strides in sea transport during the last decade. So far as the tonnage is concerned, Japan was the sixth before the Great War, following after Great Britain, Germany, Norway, France and United States of America. However, in 1919 she advanced to the fourth by passing France and Norway; and after 1920 and since has been the largest shipping country in the world with the exception of England and America. Nevertheless, it must be remembered that there is a great difference in the figures of tonnage between the two last named countries and Japan. Great Britain and America have respectively 36.7 per cent and 20.4 per cent of the world's tonnage, while Japan has only 6.2 per cent.

Capacity of sea transport depends largely upon age and construction of ships. It is generally known that ships which were built during the Great War are not so good in their quality, owing to hasty construction or lack of necessary modern equipment. Although some older ships still keep up their high rate of efficiency in spite of their age, it is common knowledge that the older a ship is the smaller it is priced, as in the case of houses. Apart from this sound

¹ TONNAGE OF SHIPS OF THE PRINCIPAL MARITIME COUNTRIES
(1,000 TONS)

(From the latest Lloyd's Register Book)

	1914 (June).	1922 (June).	1924 (June):
Great Britain and Ireland (including Dominions)	20,284	21,254	21,130
United States of America	1,837	12,506	11,823
France	1,918	3,303	3,193
Germany	5,098	1,783	2,856
Netherlands	1,471	2,613	2,533
Norway	1,923	2,337	2,326
Japan	1,642	3,325	3,655
Total (including others)	42,514	56,802	57,530

reasoning, we must notice that the recent remarkable improvement and progress in shipbuilding have greatly diminished older ships' value and efficiency. Therefore, in order to improve capacity of sea transport the construction of modern class vessels and the scrapping of old ones are most essential. This has been the policy of the English shipowners, who have been replacing their old by new vessels, for which the British Government have aided them by the Trade Facilities Act.

It can be noticed that the displacement of ships is not always an appropriate measure to show shipping strength, but only superficial figure. Their age and construction must be taken into consideration first as the decisive measure in respect of judgment of a nation's navigation. We must consider now Japan's shipping position from the point of view of ships' standard age—25 years—which is generally recognized to be maximum in commercial use. As shown below, ships of between five years and ten held 34·5 per cent of the total tonnage of the whole of Japanese ships in June, 1924. Although the percentage is apparently higher than the average of the world total, Japanese ships under the age of five, which are the most effective and desirable in sea transport, held only 21·8 per cent, in spite of the world average percentage being 26·7. Moreover, the percentage of ships of more than 25 years of age was 18·6 in Japan against 12·6 of the world's average.

PERCENTAGE OF SHIPS OF THE WORLD ACCORDING TO AGE
(June, 1924)

Ships.	World Total.		Japan.	
	No. of Ships.	Tonnage.	No. of Ships.	Tonnage.
Under 5 years	17·4	26·7	16·9	21·8
Over 5 and under 10	23·2	25·6	38·8	34·5
Over 10 and under 15	13·3	14·1	8·4	7·3
Over 15 and under 20	12·2	11·6	8·6	8·3
Over 20 and under 25	10·3	9·4	8·4	9·5
Over 25	23·6	12·6	18·9	18·6
	100·0	100·0	100·0	100·0

The above figures of the world total included every country of shipping. In order to get a more precise comparison

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with the principal maritime countries, it is necessary to extract the percentage which these countries hold. According to the following table, Japanese percentage of tonnage is the smallest in the case of ships under five years, and the largest in the case of those over 25 years. This obviously shows that Japan's actual development of shipping cannot easily be regarded as satisfactory, as the mere increase of tonnage shows.

PERCENTAGE OF SHIPS OF THE PRINCIPAL MARITIME COUNTRIES
ACCORDING TO AGE (JUNE, 1924)

Countries.	Ships Under 5 Years.		Ships Over 25 Years.	
	No. of Ships.	Tonnage.	No. of Ships.	Tonnage.
Great Britain	16.4	26.1	19.5	8.5
U.S.A.	21.7	30.4	10.8	4.7
Germany	34.4	52.0	20.6	15.2
France	20.5	32.3	21.2	11.3
Netherlands	24.5	36.8	10.7	3.4
Canada	16.9	30.5	25.9	17.7
Norway	18.7	30.2	20.9	11.6
Japan	16.9	21.8	18.9	18.6

Causes of Shipping Development.

The present navigation capacity of Japan is still far below that of the leading shipping countries both in quantity and quality. However, as compared with what it was before the Japanese-Chinese war it has made remarkable strides.

The causes of the progress are indirectly due to the facts that Japan has an advantageous geographical situation, being an island country. The change from an agricultural to an industrial country and the recent rapid development of foreign trade have encouraged Japanese shipping to a great extent. Nevertheless (a) the Government's subsidies and encouragement policy, (b) frequent outbreaks of war, (c) cheap labour, are regarded as the important direct causes.

(a) Government Protective Policy.

It is needless to add that, of the three, the Protective Policy, which the Government undertook for the purpose of developing shipping in Japan, is of first importance. The

Government's policy in regard to shipping encouragement has been partly described in "the outline of shipping development" of this chapter and in the chapter of ship-building industry, and in order to avoid repeating the description, we study here the principles of the protection afforded and its result.

The Government's navigation encouragement policy can be summarized by two divisions from the principle of the protection. The period from 1896 to 1909 was under general protectionism, and from 1910 to the present time under the system of granting subsidies to particular routes. The first Navigation Encouragement Act was promulgated in March, 1896, which regulated that any Japanese person or persons or trading companies whose partners were all Japanese subjects owning registered steamships of iron or steel with a gross tonnage of 1,000 tons or upwards and a maximum speed of 10 knots or upwards per hour, and carrying on a regular service between Japan and foreign ports, may be granted a navigation subsidy depending upon the distance run by vessels and their tonnage. In October, 1899, the Amendment of this Act came into force, the main item of which was that a navigation subsidy was to be granted in full amount to home-built ships and half to foreign built ones.

From 1910 the Government adopted the new principle of protecting shipping by the Shipping Subsidy Act of 1910, by which the Government selected the important routes and ordered companies to engage in transport according to the provisions of the Act. The Government have granted subsidies to the companies concerned ever since 1910 up to the present.

The amount of subsidies since the Government commenced the protective policy reached the colossal figure of yen 176,800,000 by 1921, of which yen 89,300,000 was granted to the Nippon Yusen Kaisha, yen 34,700,000 to the Osaka Shosen Kaisha, yen 35,300,000 to the Toyo Kisen Kaisha, yen 9,200,000 to the Nisshin Kisen Kaisha, yen 1,500,000 to the Nanyo Kisen Kaisha and yen 1,100,000 to the North Japan Steamship Co.

At the same time the Government paid great attention to the education of mariners. During the earlier part of the Meiji era almost all ships flying the Japanese flag were foreign built and manned by foreigners; nautical education was promptly improved, and the number of Japanese seamen and officers made a striking increase. In 1874 licensed mariners were 74, of which Japanese were only 4, the other 70 being foreigners; but they have now reached the figure of 25,000 licensed officers, while foreigners employed are almost nil. The Nautical College in Tokio is for the purpose of training officers of higher rank in navigation and engineering, and several local Merchant Navigation Schools are for training men and lower grade officers with a shorter course of instruction.

(b) The Outbreak of Wars.

It was not an easy task for the private companies to develop their business in the early days of shipping, even though they were encouraged by the Government with the most extensive subsidies, and some of them found sometimes that they could hardly carry on the business even with the subsidies, and it was on these occasions that the outbreak of wars gave them opportunities of getting over their difficulty. The wars which Japan has encountered up to now have developed her shipping in two ways. In the first place it was found on every outbreak of war that the vessels which private companies possessed were not adequate either in number or construction to meet the national necessities. Consequently, the Government adopted the subsidy to encourage an industry of national importance. In the second place, the rise of freightage and charterage during the wars caused betterment of financial stability and stimulated enterprising activity of the companies, owing to acquisition of abnormal profits and expansion of new routes. The most remarkable instance was that of the Great War, effects of which we have mentioned elsewhere.

(c) Cheap Labour.

As in the case of all other industries, the development of shipping is partly due to low cost of labour. According to the following table, which was taken on the basis of a cargo boat of 8,800 tons, wages for Japanese seamen are still much less than those of American and English seamen, although Japanese wages have been raised considerably and were at their highest in 1921, since when gradual cuts have been made, owing to the depression, leaving the present rate of wage at a much lower one than of 1921.

MONTHLY SALARIES AND WAGES OF SEAMEN (Yen)
(1921 by the Dept. of Communications of Japan)

Capacity.	Japan.	U.S.A.	England.	Norway.
Captain	400.00	607.74	490.00	466.32
Chief engineer	330.00	570.00	441.70	384.54
Chief cook	217.00	239.50	169.70	271.44
Quartermaster	67.00	144.50	73.62	50.16
Stoker	86.00	161.50	80.62	—
Foreman	58.00	127.50	73.62	45.36

It must not be overlooked that the foregoing salaries and wages cannot be taken into direct consideration in regard to shippers' personal expenses, as the number of officers and crew differs according to the country of employment. Take the instance of a cargo boat of 8,800 tons as before: a Japanese boat on an average takes 67 persons owing to their physical inferiority, while an American boat takes 48, English 45 and Norwegian 40 for boats of the same size.

COMPARISON OF PERSONAL EXPENSES
(1921, by the Dept. of Communications of Japan)

	Japan	U.S.A.	England.	Norway.
No. of officers and crew (head)	67	48	45	40
Total sum of salaries and wages (yen)	6,248	9,036	7,754	2,922
Average wage per head (yen)	93	188	172	73
Average wage per ton (yen)	0.71	1.28	0.88	0.33
Percentage of average wages per head (taking the American as 100)	44	100	91	38
Percentage of average wage per ton (taking the American as 100)	62	100	77	20

According to the above table the percentage of Japanese average wages of seamen is only 44 per cent against 100 per cent of American and about half of the Englishmen, but that of Norway was, on the contrary, less than that of the Japanese. However, an adequate comparison can be made by the average figures of wages per ton, by which it will be seen that Japan is yen 0.57 less than America, and only yen 0.17 less than England, but more than 50 per cent that of Norway. Therefore, although Japanese wages per head still remain advanced they are lower than American or English, and the actual cost of shipping in respect of wages has increased, so the advantage which was previously gained owing to the low rate of wages has consequently decreased.

Future of Japanese Shipping.

It is common knowledge that since 1921 shipping has been depressed more or less throughout the world, and Japanese shipping has been specially hard hit. Enterprisers in Japan speculated wildly, and allowed their business to get into an unsatisfactory state, owing to bad management. Therefore, the reaction came rapidly and the slump was very severe. Some of the shipping companies were on the verge of bankruptcy at the nadir of the depression, and even the larger firms which usually are financially solid found themselves in an unfavourable position. This unhealthy state of affairs still prevails in Japanese shipping circles. Unless this is improved and readjusted at the earliest possible period, satisfactory results cannot be gained in open sea competition, although the mere figure of ships' tonnage may register an increase.

Apart from this, it must not be forgotten that Japanese shipping has grave disadvantages and inferiority, such as deficiency of seamen, high cost of fuel, high cost of shipbuilding and high rate of interest.

Heretofore, low wages of Japanese seamen has caused the greater part of the development, it being one of the advantages of the world competition of shipping as mentioned elsewhere. The reason for being paid lower than other countries is mainly due to their deficiency. However,

a higher wage is generally demanded and greatly increased since the War. This advantage is consequently apt to be diminished in spite of the fact that the standard of efficiency is still low.

At the same time, Japanese ships have still to employ more men than other countries; the result is that wages per ton have been consequently increased, as shown in the foregoing table, to the extent that Japanese wages per ton are very near to that of England. This means, needless to add, that the advantage which Japan held in respect of lower wages is disappearing, and the seamen's inferiority is said to be relatively growing more than ever.

In regard to fuel for ships, Japan is by no means rich in either coal or oil, and not only is coal in Japan not much cheaper as compared with America or England, but her oil production is unquestionably short, and a large quantity is supplied to her by foreign countries. It is noteworthy that the number of oil-driven vessels has risen considerably during recent years. This tendency may be seen in the following table:

PERCENTAGE OF VESSELS ACCORDING TO KIND OF FUEL IN USE
(Lloyd's Register Book)

	Percentage of Total Gross Tonnage.	1913-1924.
Sailing vessels and sea-going barges	8.06	3.92
Oil, etc., in internal combustion engines	0.45	3.09
Oil fuel for boilers	2.65	26.79
Coal	88.84	66.20
Total	100.00	100.00

Thus, the popularity of oil vessels means, in other words, that Japan has to face the difficult question of fuel. It is quite obvious that the scarcity of oil production causes a decisive disadvantage to Japanese shipping, as she must pay a high price for foreign oil for marine purposes.

It has already been described in another chapter that the cost of shipbuilding in Japan is inevitably higher than that of other countries. In the case of importing foreign built ships, the shipowners must meet the expenses of bringing the ships to Japan besides paying the import duty levied on such ships. In either case, Japanese shipowners are destined

to be placed at a disadvantage compared with other countries. Needless to say that the high rate of interest in Japan greatly affects the enterprise that has to do with international competition.

Judging from these facts, Japanese shipping does not look promising, having been on the downward run since the Great War. This situation will continue so long as the disadvantages surpass the advantages. However, the former seems so deeply rooted that Japan does not seem to be able to remove them. In order to cope with international competition and to improve the present shipping situation, it is necessary for small companies to amalgamate with larger ones, so as to make the financial position stronger. This would strengthen the whole shipping industry of Japan, and make it better able to face international competition.

§ 2. RAILWAYS

The railways of Japan may practically be said to have been under State control since 1906, when the nationalization of railways was created, as since then over 82 per cent of the total mileage open to traffic has been managed by the Government. On the occasion of the nationalization, the Imperial Railway Board was formed, which dealt with all matters in regard to railways and tramways, both Government and private, and also supervised the South Manchurian Railways. The mileage of private railways at the time of the nationalization was 4,898, of which the State took over 4,453 miles, including 1,631 miles which had previously been under State management. Since then great efforts have been made year by year to extend the national railway lines. Of the aggregate working mileage in 1923, 7,013 miles represented those in Japan proper, 468 in Formosa, 1,180 in Chosen and 686 under the South Manchurian Railway Co., making the total 9,356 miles. Besides this, 2,347 miles of private lines are open to traffic in accordance with the law of light railway.

The railways of Japan are, therefore, not of such great importance as other industries, particularly from the point

of view of private enterprise. However, judging from the facts that more than two thousand miles are run by private railway companies at present and that the Government has kept a policy of encouraging extensive construction of branch lines under private management, it is worth while mentioning the brief history and the present state of the railways of Japan.

Government Railways.

I. Before the Nationalization.

The pioneer railway of Japan was constructed by the Government during 1870-1872 between Tokyo and Yokohama, a distance of some eighteen miles, and from then other schemes for linking up the larger cities of importance were formed and worked in succession. At the very beginning one of the most important questions was that of gauge, for the decision arrived at would decide the gauge for the whole railway system of Japan in the future. The construction under the broad gauge of 4 ft. 6 in. was discussed at great length, but in view of the topographical, financial and other conditions of the country, the narrow gauge of 3 ft. 6 in. was adopted, and is now universal in Japan. In 1874 the Osaka-Kobe line of about twenty miles was open to traffic. Two years later a line from Osaka to Kyoto of about twenty-seven miles was also completed. For a few years after 1876, owing to civil trouble and the Formosan expedition, which needed the urgent attention of the Government, railway construction was kept practically at a standstill.

However, it was not long before the Kyoto-Otsu line was completed, and by this time the Government had once more become active in the matter, and floated loans and appropriated the funds necessary for the work they projected. The Kyoto-Otsu line is noted for the reason that it was the first line of railway constructed by Japanese engineers without the aid of foreign experts, and, moreover, the work was comparatively difficult, as it involved the first tunnelling undertaken in Japan. In Hokkaido the

Otaru-Horonai section was opened in 1882; but it was not until 1889 that a through main line between Tokyo and Kyoto was established, the distance being 328 miles. Meanwhile, a branch line was opened, and an inland line between Takasaki and Naoyetsu was approached from both sides of the Usui Pass, and each section was opened to traffic in 1887. For the Pass it was decided to adopt the Abt-system, and with the completion of this portion in 1893 direct communication from Tokyo to the Sea of Japan was established.

The programme of railway construction now took definite shape, and the law relating thereto was issued in 1892. It divided the routes into several construction sections, and those of more immediate importance were singled out and set apart as the first period construction programme. In pursuance of this programme work was started at once on several sections. For Hokkaido a special law of railway construction was enacted in 1895, in order to facilitate colonization and the working of collieries. Though the progress of all this work was more or less affected by the war with China and then by the economic disturbance which ensued on the termination of the war, it was on the whole fairly carried out, so that on April 1st, 1905, the total length of the Government railways reached to no less than 1,470 miles.

2. Railway Nationalization.

Prior to 1906 the Government had brought salt, tobacco and camphor under a State monopoly system for the purpose of increasing the national revenue. The experiment was successful so far as the national revenue was concerned, and for the same reason the Government decided to nationalize all private railways. It was also considered advisable that railways should be constructed for public utility even in remote districts, where they could not be commercially remunerative and private companies could not be expected to undertake their construction. The Railway Nationalization Bill was laid before the 22nd Session (1905-1906) of the Diet by the Government, and

was passed with some modification. It was the prime policy of the Government to place all the main lines under one control, so that, while granting charters to private concerns, the right of purchase was always reserved. Seventeen private railways were thus purchased by the Government in 1906-1907, the purchase being made by domestic loan bonds issued for the purpose. The purchasing price was fixed as twenty times the average profit during the previous six half-year terms. However, if the purchasing price did not come up to the cost of construction in the case of those railways which had not been open for the six

MILEAGE OF RAILWAYS IN JAPAN PROPER
(Mile)

Years.	State.	Private.	Total.
1872 . . .	18	—	18
1877 . . .	64	—	64
1883 . . .	181	63	244
1887 . . .	324	317	641
1892 . . .	557	1,322	1,879
1894 . . .	580	1,537	2,117
1897 . . .	661	2,288	2,949
1902 . . .	1,226	3,010	4,236
1905 . . .	1,470	3,283	4,753
1906 . . .	3,116	1,691	4,807
1907 . . .	4,453	445	4,898
1910 . . .	4,869	484	5,353
1911 . . .	5,043	562	5,605

business terms, the price was to be settled by mutual agreement, and was not to be less than the cost of construction.

The private railways thus nationalized were the Hokkaido Collieries, Kobe, Nippon, Sanyo, Kyushu, Hokuyetsu, Sobu, Kwansai, Sangu, Ganyetsu, Nishinari, Hokkaido, Kyoto, Hankaku, Boso, Nanao and Tokushima, seventeen in all, which constituted the trunk lines. The total price paid amounted to yen 481,981,000, of which some yen 2,658,000 was paid for subsidiary enterprises, such as shipping, warehousing, etc., and the traffic mileage was 2,822 with capital invested amounting to yen 108,763,000. Thus, all the important railways constructed for public transport came

under State control. At the end of 1911 the Imperial Railways possessed no less than 5,043 miles of lines under traffic.

After the private railways were nationalized the traffic system was brought under uniform control. The service has been vastly improved, and the volume of traffic has shown a steady advance year by year, indicating how much this important service of transport has been utilized in contributing to the general prosperity of the country. The result of nationalization may be pointed out as follows :

1. The improvement of the service.
2. The extension of railways to remote districts which private companies could hardly exploit.
3. The lowering of passenger and goods tariff, in spite of advanced wages and other expenses.

(Passenger rate per mile was reduced by one sen ($\frac{1}{4}$ d.) third class, 25 per cent second and 50 per cent for first, for distances over 50 miles.)

4. Profits amounted on an average to 5.8 per cent of the capital invested, in spite of the greater outlay, and the Railway Department is enabled to meet the colossal amount of interest on Railway Loans, subsidy to private railway companies and the reserve fund for construction and improvements.

At the completion of nationalization the total income returned yen 69,776,000 in 1907, of which yen 35,026,000 was passenger receipts and yen 25,085,000 goods receipts. One thing noticeable about Japanese railways is, that in most other countries the volume of goods traffic and the receipts therefrom constitute the chief item of revenue, but in Japan it is quite the reverse, as the volume and receipts of passenger traffic always surpass those of goods traffic. This is particularly true of the railways in the central and western parts of the main island. But in Kyushu and Hokkaido, the traffic presents somewhat different features : for the former contains the extensive coal-producing districts, whilst the latter is as yet sparsely populated, in spite of its natural resources.

THE REPRESENTATIVE INDUSTRIES 261

The accounts of the Government railways¹ were set apart from the general State finance from the fiscal year period 1909-1910 to 1921. During this period all the disbursements were to be met from revenue accruing from the capital, while expenses of construction and improvement were to be met from profits. In the event of any deficit, however, loans would be raised, provided that for all such loans the Government railways were required to transfer to the Government Sinking Fund Account every year a sum sufficient to meet the interest and to repay the prescribed instalment of capital.

3. The Present State of the Government Railways.

Since the railways came under State control the total traffic mileage increased from 4,453 miles in 1907 to 7,013 miles at the end of 1923, indicating an extension of 2,560 miles, or an addition of 460 miles a year during the last 16 years since nationalization.

The total number of railway employees on Government Railways increased from 95,627 in 1910 to 158,570, of whom 151,425 were men, and 7,145 women in 1919. At the same time the number of passengers and volume of freight multiplied, and the income and profits accruing from the railway traffic increased correspondingly from yen 69,776,000 in 1907 to yen 429,594,000 in 1923.

Passenger fares were raised in 1918 and again in 1920, the fare for third class being 2.5 sen per mile (about $\frac{1}{4}$ d.) up to 50 miles, 2.1 sen under 100 miles and from 1.7 sen to 1 sen for distances over 100 miles. The goods tariff differs according to kinds of goods, and the rates have been raised thrice, in 1918 (20 per cent), in 1920 (18 per cent for ferry services only) and in 1921 (28 per cent).

¹ STATE RAILWAYS

Years.	Capital Invested From Beginning. (Yen).	Profit on Capital. Percentage.
1917 (March) . . .	1,108,060,000	7.2
1918 " . . .	1,189,913,734	8.3
1919 " . . .	1,277,505,543	7.8
1920 " . . .	1,382,996,186	7.7
1921 " . . .	1,542,381,275	7.0

In 1921 the Department of Railways was established, and the accounts of the Department are not now independent of general State finance from the fiscal year as they used to be. However, the Government have been paying the utmost attention to the matters in connection with the construction and improvement of railways, which are widely recognized by the authorities to be necessary for development of national economy. On this account the Government's policy of strict retrenchment was not extended to the State railways and the construction plans were proceeded with.

MILEAGE OF RAILWAYS IN JAPAN (PROPER)
(Mile)

Years.	State.	Private.	Total.
1912 . . .	5,217	767	5,984
1913 . . .	5,472	1,121	6,593
1914 . . .	5,686	1,444	7,130
1915 . . .	5,757	1,743	7,500
1916 . . .	5,856	1,833	7,689
1917 . . .	5,999	1,834	7,833
1918 . . .	6,072	1,941	8,013
1919 . . .	6,202	2,005	8,207
1920 . . .	6,480	1,944	8,424
1922 . . .	6,722	2,150	8,872
1923 . . .	7,013	2,347	9,360

(The above table does not include the total mileage of the Formosan and Chosen Railways, the former of which is 468 miles and the latter 1,189 miles respectively.)

The New Railway Construction Law, which replaced the Law of 1891, was passed by the Diet of 1922. The New Law embraces a construction scheme that covers 178 new lines, the total length of which is 6,349 miles.

In order to carry out the established first ten years' new construction scheme, and also to undertake work of fresh lines in order to facilitate the local traffic, the vast amount of expenditure of yen 676,236,000 was approved by the Imperial Diet. In addition, the further sum of yen 814,379,000 as continuing expenses has been recently approved by the Diet for constructions and improvements of railways to be carried out for the ten years ending

1931-1932. The electrification of the main lines, which is the Government's earnest attempt, is already in progress. It is estimated that yen 21,983,000 will be spent on the Tokaido line alone (Tokyo-Kobe). The estimate for improvement and construction expenditure for the fiscal year 1923-1924 was yen 130,900,000 for the former and yen 70,000,000 for the latter—improvement expenses to be met by railway profits and construction expenses by issuing public bonds.

Regarding the development of the Government railways after the nationalization, the preceding table indicates most precisely.

Private Railways.

The first private railway in Japan was built by the Japan Railway Co. between Tokio and Aomori with a branch line to Takasaki. The company was organized in November, 1881, as a joint-stock concern, with a capital of yen 20,000,000. It was rather a rash undertaking at the time, for sufficient experience of the work had not then been acquired, and the length of the line, which extended over 500 miles, necessitated a large outlay. Moreover, there were no data available on which to make a reliable estimate of profit and loss, so that the Government guaranteed, in compliance with the request of the company, a fixed rate of dividend for a certain number of years, and gave every possible assistance for the furthering of the work. By the end of 1891 the whole of the projected work was finished.

In 1886 two large companies were formed under the name of the Sanyo Railway and the Kyushu Railway Co., the former with a capital of yen 13,000,000 to connect Kobe and Shimonoseki, and the latter with a capital of yen 11,000,000 to connect Moji, Nagasaki and Yatsushiro. A subsidy was also granted by the Government to both companies. Other private companies were formed in 1888 in the vicinity of Tokio. In the districts adjoining Osaka the Hankai Railway Co. (now Nankai Railway Co.) was formed in 1884, the Kwansai Railway Co. in 1888 and the Sangu in 1890.

In Hokkaido there appeared in 1889 the Hokkaido

Collieries Railway Co., which purchased the Government Otaru-Horonai line, and secured a charter for the construction of the Muroran and Yubari lines. In Shikoku there was established the Iyo Railway Co. in 1886, and the Sanuki in 1888, the latter being subsequently affiliated to the Sanyo Railway Co. With these there came into existence, in Kyushu, the Chikuho Railway Co. in 1889 and the Hoshu in 1890, both of which, however, were later amalgamated with the Kyushu Railway Co.

The years immediately before and after 1890 were a period characterized by numerous undertakings of this sort. In view of these circumstances, the Government gradually ceded to private railway companies the greater part of the projected lines left after selecting the so-called first period construction programme. Naturally, the mileage under traffic of private railways went on increasing, until the end of 1905, when it registered 3,283 miles. But with the nationalization of railways in the following year private activity in this field of enterprise was reduced to dealing with only local requirements. At the end of 1910 the number of private railway companies, including light railways, was 59 and the total mileage only 484 miles. However, after nationalization, the Government offered special facilities to private companies for the construction of branch lines, parallel with the construction of the State railways. The Railway Mortgage Law authorizes a railway company to create a foundation for the purpose of using its lines as an object of mortgage. The Law of Light Railways makes the promotion of the enterprise much easier for the persons interested. Needless to say, the subsidy system on private railways encouraged the development of private railways. As a consequence, the recent progress of private railways showed striking figures, the number of companies being 289 in 1920, the total amount of authorized capital yen 414,302,000 in 1923. The total mileage was 2,347 in 1923. The other figures in connection with earnings, expenditure and profits, rolling stock and traffic, given in the following tables, are the actual results of the recent development of private railways in Japan.

REVENUE AND EXPENDITURE
(1,000 yen)

STATE RAILWAYS

Years.	Revenue				Expenditure.		Net Profit.
	Passengers.	Freight.	Others.	Total.	Working Expenses & Others.	Interest Total.	
1905-06	13,472	7,981	2,603	24,056	—	—	11,129
1907-08	35,026	25,085	9,665	69,776	—	—	35,751
1908-09	39,087	30,422	10,372	79,881	—	—	44,708
1911-12	52,339	46,329	1,510	100,178	45,768	34,159	79,927
1912-13	55,764	50,145	2,115	108,024	50,013	38,379	88,392
1913-14	57,296	53,737	2,443	113,476	54,551	39,131	93,682
1914-15	56,366	53,372	2,429	112,168	57,178	40,748	97,926
1915-16	58,557	59,008	2,646	120,211	55,601	40,387	95,988
1916-17	66,399	71,638	3,218	141,255	61,163	45,103	106,266
1917-18	87,017	90,595	5,912	183,524	84,370	55,574	139,944
1918-19	123,385	112,133	8,028	243,546	144,101	56,037	200,138
1919-20	166,607	135,013	8,311	309,931	202,816	47,627	250,443
1920-21	207,839	137,399	5,460	350,698	242,161	54,180	296,341
1921-22	219,228	171,135	7,234	397,599	218,650	63,411	282,061
1922-23	237,446	183,573	8,574	429,593	229,778	68,432	298,210

PRIVATE RAILWAYS¹

1905-06	20,658	17,219	9,547	47,424	—	—	24,078
1907-08	7,074	2,919	1,964	11,957	—	—	7,507
1908-09	2,763	651	484	3,898	—	—	2,298
1911-12	3,346	1,315	259	5,220	2,401	545	2,949
1912-13	3,866	1,695	167	5,728	3,061	773	3,834
1913-14	4,827	1,912	395	7,134	3,808	816	4,624
1914-15	5,778	2,359	444	8,581	4,777	1,156	5,933
1915-16	6,478	2,817	540	9,835	5,408	1,875	7,283
1916-17	7,563	3,663	687	11,913	6,203	2,308	8,511
1917-18	9,813	4,811	900	15,524	8,484	2,265	10,749
1918-19	13,073	6,647	1,420	21,140	12,930	2,613	15,543
1919-20	18,210	8,883	1,577	28,670	18,078	2,850	20,928
1920-21	23,211	10,179	1,962	35,352	22,223	3,233	25,456
1921-22	25,333	12,945	1,801	40,079	23,069	3,652	26,721
1922-23	28,934	14,935	1,983	45,852	19,463	—	—

(From the *Financial and Economic Annual of Japan*, 1924.)

ROLLING STOCK AND TRAFFIC

STATE RAILWAYS

Years.	Locomotives.	Passenger Carriages.	Freight Wagons.	Traffic.	
				Passenger.	Freight (Ton).
1911-12	2,305	5,893	37,952	151,077,000	29,337,000
1912-13	2,381	6,148	40,527	160,711,000	32,537,000
1913-14	2,500	6,449	42,705	167,773,000	36,348,000
1914-15	2,661	6,693	43,702	166,092,000	35,273,000
1915-16	2,679	6,836	43,592	172,290,000	35,800,000
1916-17	2,727	6,867	44,391	197,043,000	42,100,000
1917-18	2,827	6,903	46,600	245,234,000	48,753,000
1918-19	2,933	7,118	48,568	288,061,000	53,314,000
1919-20	3,120	7,520	51,067	357,881,000	59,939,000
1920-21	3,306	8,066	52,199	405,819,000	56,624,000
1921-22	3,518	8,575	52,492	454,525,000	57,394,000
1922-23	3,671	9,298	55,405	512,754,000	64,070,000

¹ The total revenue of private railways does not include Government subsidies.

PRIVATE RAILWAYS

Years.	Locomotives.	Passenger Carriages.	Freight Wagons.	Traffic.	
				Passenger.	Freight (ton)
1911-12	162	765	1,797	28,828,000	2,983,000
1912-13	197	893	2,425	32,297,000	3,615,000
1913-14	265	1,092	3,286	39,267,000	4,237,000
1914-15	351	1,355	3,753	47,276,000	4,943,000
1915-16	428	1,511	4,743	51,390,000	5,790,000
1916-17	466	1,581	4,999	58,793,000	7,664,000
1917-18	462	1,595	5,340	74,256,000	9,231,000
1918-19	483	1,631	5,864	86,988,000	10,474,000
1919-20	515	1,782	6,526	109,681,000	12,358,000
1920-21	522	1,773	6,637	116,007,000	10,868,000
1921-22	575	1,955	7,197	129,143,000	12,492,000
1922-23	629	2,130	7,771	151,825,000	14,871,000

(From the *Financial and Economic Annual of Japan*, 1924.)

CAPITAL INVESTED (I,000 YEN) AND NUMBER OF WORKERS

Years.	Cost of Construction of State Railways.	Private Railways.			Number of Workers.		
		Authorised Capital.	Paid-up Capital.	Number of Co.s	State.		Private.
					Men.	Women.	
1913-14	699,152	75,037	56,711	249	108,456	3,631	6,171
1914-15	746,909	92,630	69,183	284	111,480	3,484	8,556
1915-16	775,643	108,614	84,271	262	108,335	3,767	9,810
1916-17	806,412	111,372	89,138	243	111,338	3,944	10,430
1917-18	863,743	118,739	96,629	190	121,194	4,694	13,446
1918-19	935,445	140,825	109,338	181	133,471	5,564	15,562
1919-20	1,052,643	161,997	126,366	267	151,425	7,145	16,664
1920-21	1,190,767	212,109	154,192	289	—	—	—
1921-22	—	291,975	195,776	—	—	—	—
1922-23	—	414,303	268,791	—	—	—	—

(From the *Financial and Economic Annual of Japan*, 1924.)

CHAPTER VIII

ELECTRICITY IN JAPAN

Fire Electricity.

THOUGH it is a comparatively new enterprise, the electrical industry in Japan has developed remarkably during recent years, and has attained the position of being one of the most promising enterprises in the Japanese industrial world. The start of this industry was as early as 1878, but from a commercial point of view the Tokio Dento Kabushiki Kaisha (Tokio Electric Light Co.), which was formed in 1883, is the first landmark in the history of this industry. Between 1883 and 1892 eleven

RISE OF PERCENTAGE OF COST OF COAL USED AS FUEL

	Monthly Average Revenue (Yen).	Monthly Average Payment for Coal (Yen).	Per Cent.
1893 (First half)	2,516	612	24.36
(Second half)	2,846	641	22.55
1894 (First half)	3,164	756	23.91
(Second half)	3,626	1,241	34.24
1895 (First half)	3,941	1,326	33.64
(Second half)	4,431	1,538	34.71
1896 (First half)	4,953	1,541	31.11
(Second half)	6,321	2,018	31.93
1897 (First half)	7,482	2,767	36.99
(Second half)	7,111	3,505	49.30

companies were formed with the aggregate capital of yen 2,477,000. After the war with China (1894-1895) the industry made further progress, in spite of the financial depression which followed. At the end of the war the number of companies was as many as 47. It is an important fact to note that before the Japanese-Russian War

(1904-1905), the electricity generated in Japan was principally fire power, as the water power was still being used only on a small scale. However, as the price of coal, which is the main fuel for generating electricity, soared, the industry had to face considerable difficulty, and companies' profits consequently dropped. This was one of the main causes of the rapid growth of hydro electricity undertakings. According to the reports of the Tokio Electric Light Co. respecting this point, the cost of coal became an enormous and ever-increasing charge on the revenue of the company, as the above table shows.

Apart from this, an intense demand for electric light was growing after the war with Russia. The number of lights used in 1908 showed a threefold increase on the number used in 1903; the power of electric motors increased fourfold; and about 120 new companies were established in quick succession during that period of nearly six years. The development of this industry at that time was phenomenal. As to the capital invested in this industry, the paid-up capital in 1908 figured at more than four times that of 1903; the authorized capital was also five times more, and the amount of loans and borrowed money reached almost five times as much. Counting the capital of the companies being floated the total figured at yen 227,542,000 in 1908, which with the exception of banking investments was the greatest sum invested in any industry. In consequence of this, big companies sprang up with a capital of over yen 5,000,000, and undertook generating on a large scale. In fact, there were three companies with capital of over yen 10,000,000 each and another three with over yen 5,000,000 each.

GENERAL CONDITIONS BEFORE AND AFTER THE JAPANESE- RUSSIAN WAR

Years.	No. of Lights (1,000).	Candle- Power (1,000).	Horse- Power of Motors.	Power of Current (K. watt).	Authorized Capital (Yen 1,000).	Paid-up Capital (Yen 1,000).	Loans and Borrowed Money (Yen 1,000).
1903	332	4,162	1,107	44,252	28,495	12,152	1,807
1904	385	4,451	5,404	58,972	54,487	35,405	2,054
1905	464	5,188	5,446	74,374	60,444	43,793	2,517
1906	593	6,612	8,278	91,296	115,189	63,386	2,636
1907	782	8,649	11,249	114,910	138,083	87,685	5,682
1908	1,120	11,849	17,093	154,732	152,705	104,998	8,924

Fire to Hydro Electricity.

Owing to the rise of coal prices after the war with China, the electric supply industry in Japan, which mainly depended upon the coal, very quickly turned to utilizing water, and this tendency was very significant before and after the Japanese-Russian War. If we examine the number of companies concerned and the total power of current of each during this period, it will be noticed that water power electricity showed a greater development than fire electricity did, which is roughly shown below :

COMPARISON BETWEEN WATER POWER AND FIRE POWER
ELECTRIC COMPANIES (1903-1908)

WATER POWER				
Years.	No. of Co.s Estab-lished.	No. of Co.s Under Estab-lishment.	Total	Power of Current (K.W.).
1903	42	19	61	13,124
1904	45	13	58	16,409
1905	51	14	65	18,547
1906	59	23	82	25,195
1907	70	33	103	38,622
1908	84	33	111	60,121
FIRE POWER				
1903	49	14	63	31,128
1904	54	9	63	42,563
1905	53	8	61	55,827
1906	48	17	65	66,101
1907	46	28	74	76,288
1908	51	31	82	94,611

(K.W. = Kilo Watt.)

The start of hydro electricity in Japan was much later than that of fire electricity, although the former was introduced before the Japanese-Chinese War, 1894. The first attempt of the electric supply industry was when the Kyoto Municipality constructed a power station in 1892 near the canal of Biwa Lake, and had the use of the canal water. This was merely a trial, but it proved so successful that the municipality went further and completed the construction of a 2,000 horse-power system in 1898. Stimulated by this success many hydro electric enterprises were promoted. After the war with Russia, owing not only to the rise of

coal, but to the cheap cost of maintenance and to good management, water power electricity tended to take the place of fire power, in spite of the big outlay on construction necessary at the start of the former kind of enterprise. Electric light generated by water power could be supplied between 30 per cent and 40 per cent cheaper than fire electricity, and yet it was pointed out that it was easy on top of that to make 20 per cent and 25 per cent profit a year. Thus, fire electricity was no longer a competitor with hydro electricity from the business point of view. Directly after the war with Russia big hydro electric companies¹ were promoted in quick succession, and the present progress of hydro electricity dates from that time.

In the meantime the progress of technical and scientific knowledge in electricity was considered good. The Tokio Electric Light Co., whose plant was constructed near the River Katsura, was one of the largest power stations in those days. It was of 22,500 horse-power, water volume 750 cubic feet and height of waterfall 345 feet at the time of its construction. The success of the work in connection with transmission of electricity from the power station to Tokio, a distance of 50 miles, was a noteworthy achievement at this early stage of the enterprise. Stimulated by the satisfactory result, other companies began to engage in the work on a larger scale. In 1914 the Inawashiro

¹ Names of Companies. Hydro.	Established in.	Authorized Capital. (Yen).
Ujigawa Hydro Electricity Co.	Nov., 1906	12,500,000
Hakone Hydro Electricity Co.	Dec., 1906	1,200,000
Anglo-Japanese Hydro Electricity Co.	July, 1908	12,000,000
Jomo " " "	May, 1907	500,000
Fuji " " "	Nov., 1907	600,000
Nagoya " " "	Nov., 1906	5,000,000
Hokuriku " " "	Aug., 1908	200,000
Niigata " " "	May, 1907	1,500,000
Date " " "	Aug., 1907	300,000
Harima " " "	Jan., 1908	500,000
Sanin " " "	Sept., 1907	200,000
Tsujimachi " " "	May, 1907	600,000
Tokushima " " "	June, 1907	300,000
Kinugawa " " "	July, 1910	27,000,000
Katsuragawa " " "	July, 1910	15,000,000
Kyushu " " "	Aug., 1909	11,500,000
Inawashiro " " "	July, 1911	21,000,000

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Hydro Electricity Co. was successful in transmitting high pressure electricity of 115,000 volts from the lake of Inawashiro to Tokio, a distance of over 150 miles. This was the third largest transmission achievement in the world at this time.

The electricity supply industry continued to make rapid progress before the War, especially in water power, and after the War the development was particularly striking. During the ten years from 1914 to 1923 the total paid-up capital is estimated to have increased by yen 1,242,840,000 or 269 per cent, i.e. yen 460,355,000 in 1914 and yen 1,703,195,000 in 1923. Electric power consumption jumped from 615,000 kilo watt in the former year to 2,062,000 kilo watt in the latter, an increase of 235 per cent.

In fact, during the past ten years the generation of electricity by water power has grown apace, and has outstripped fire generation. According to the following table, both fire and water power electricity were almost parallel before the War, but soon after the latter went ahead, with the result that 63.3 per cent of the total electricity power operated in Japan at the end of 1923 was generated by water power.

INCREASE OF ELECTRIC POWER
(1,000 kilo watt)

Years.	Water Power.	Fire Power.	Total.	Percentage.	
				Water	Fire.
1912 . .	233	229	462	50.4	49.6
1913 . .	322	275	597	53.9	46.1
1914 . .	449	267	716	62.7	37.3
1915 . .	541	231	772	70.0	30.0
1916 . .	460	346	806	57.0	43.0
1917 . .	457	419	876	55.6	44.4
1918 . .	589	395	984	59.8	40.2
1919 . .	800	333	1,133	70.6	29.4
1920 . .	824	554	1,378	59.7	40.3
1921 . .	915	612	1,527	59.9	40.1
1922 . .	1,070	709	1,779	60.1	39.9
1923 . .	1,307	755	2,062	63.3	36.7

(This table does not include the figures under construction.)

General Aspects of the Recent Development

1. Increase of Big Companies.

As the result of expansion of old companies and of the establishing of many new ones, the amount of capital, debentures and loans invested in the industry has multiplied rapidly, as shown in the following table. It is noteworthy that large companies,¹ whose capital is over yen 5,000,000, increased in number to 78 in 1921 from 18 in 1912.

2. Increase of Income.

The volume of income also showed a striking increase, which was particularly noticeable in the case of the electric power supply companies, and subsidiary enterprises, such as electric machine and apparatus companies. The increase of revenue to the former indicates a larger demand for electric power, owing to the general tendency towards electrification, and in the case of the latter the increase was the inevitable consequence of the wider use of electricity, causing a demand for machines and apparatus. On the other hand, the income of light supply and electric railway and tramway companies does not show such a noticeable increase as compared with the former two kinds, the reason being that an increase of charges in the case of railways and tramways could not be made without the sanction of the Government, and, moreover, light supply companies

¹ NUMBER OF BIG COMPANIES
(End of each year)

Years.	Capital Over 5,000,000 (Yen).	Capital Over 10,000,000 (Yen).	Capital Over 50,000,000 (Yen).
1912 . . .	8	8	2
1915 . . .	14	14	4
1919 . . .	16	22	4
1921 . . .	28	44	6

CAPITAL INVESTED IN ELECTRICAL INDUSTRY
(End of each year)

Years.	Authorized Capital (Yen).	Paid-up Capital (Yen).	Loans and Borrowed Money. (Yen).
1914 . . .	578,160,000	460,355,000	98,697,000
1918 . . .	788,506,000	646,514,000	133,387,000
1923 . . .	2,306,845,000	1,703,195,000	585,634,000

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could not make large profits like others, owing to the keen competition amongst themselves as well as from gas companies.

EARNINGS AND EXPENDITURE OF THE COMPANIES CONCERNED
(1,000,000 yen. End of each year)

(From the *Oriental Economist*)

	1912.	1916.	1920.	Increase of 1920 Over 1912 (Percentage).
No. of Co.s taken into account	292	515	593	—
Income of Light supply	25.6	48.8	112.1	338
" " Power	5.7	23.8	92.4	1,521
" " Trams and railways	21.6	31.1	89.0	322
" " Subsidiary enterprises	2.3	6.8	26.8	1,065
" " Others	3.1	5.5	31.2	906
Total	58.3	116.0	351.5	502
Total expenditure	36.4	68.8	233.3	541
Net profit	21.9	47.2	118.2	437
Percentage profit on capital invested	8.3	9.4	12.5	5.2

In order to get a more precise view of the percentage profit on capital invested, we classify the next table according to the dividends declared. By this table it will be obvious that the financial condition of the companies has greatly improved of late years, as compared with the years before the Great War :

COMPANIES CLASSIFIED BY PERCENTAGE OF THEIR DIVIDENDS
(From the *Oriental Economist*)

Years.	Over 15 %.	Over 12 %.	Over 5 %.	Under 5 %.	No Dividends.	Loss.	No. of Co.s Taken Into Account.
1912	9	52	140	15	32	12	260
1913	7	74	172	20	45	20	338
1914	6	92	198	29	48	21	394
1915	11	106	197	33	60	18	425
1916	13	121	219	20	65	18	456
1917	33	118	237	9	46	20	463
1918	40	129	228	10	50	21	478
1919	58	130	230	9	47	26	500
1920	49	122	232	23	62	39	527

3. Number of Electric Lights.

About twenty years ago, at the beginning of the industry, the use of electric light did not prevail generally among the rich and poor, because it was much more expensive than oil lamps. However, as the industry improved and the construction of works was extensively undertaken, the convenience of electricity gradually became known, and was followed by a rapid increase of consumers. As the

users increased the companies consequently were able to make a reduction of the cost of lights. At the same time competition amongst electric and gas companies became very keen, so that prices were forced down still lower and electricity then became popular. The number of consumers increased year by year. However, the average number of electric lights per 100 heads of the Japanese population was only 34·8 in 1922, or 0·348 per head. If half the population of Japan (the total was 59,460,000 in 1922) had a light per head, more than 10,000,000 would be required, which would not be a difficult task to overcome in the present progressive state of the industry. From this point of view the future prosperity of the light supply seems to be assured.

INCREASE OF THE NUMBER OF ELECTRIC LIGHTS
(End of each year)

Years.	Number.	Electric Power (K.W.).
1910	1,946,047	68,000
1914	6,994,440	158,900
1919	14,167,685	237,200
1920	16,137,780	279,300
1921	18,114,095	327,700
1922	20,522,324	401,500
1923	21,690,000	433,800

4. Combination of Companies.

The most significant thing devised during recent years is the movement towards combination by the companies concerned. Of those combined, the Tokio Dento Kabushiki Kaisha (Tokio Electric Light Co.) and the Toho Denryoku Kabushiki Kaisha (The Eastern Electric Power Co., formerly the Nagoya Electric Light Co.) are the two largest ones.

The former succeeded in combining nine companies in the two and a half years from March, 1920, and increased its capital of yen 121,000,000 to the large figure of yen 222,000,000. It is said to be the largest combine in Japan at present. The company is looking further ahead, and anticipates entry of the small companies in the Kwanto

district, such as the Kinugawa Suiryoku Denki Kabushiki Kaisha, Inawashiro Suiryoku Denki Kabushiki Kaisha, Keihin Denryoku Kabushiki Kaisha, Shinyetsu Denryoku Kabushiki Kaisha and Teikoku Dento Kabushiki Kaisha. Although some of these companies are in great competition with the larger one, it is generally supposed that they will sooner or later come under the management of the Tokio Dento Kabushiki Kaisha.

The Toho Denryoku Kabushiki Kaisha is a big combine in the Nagoya district. The Nagoya Electric Light Co. acted as the principal company in organizing the combine, amalgamating about seventeen neighbouring companies since 1920, with a total capital of yen 139,820,000.

The Daido Denryoku Kabushiki Kaisha, which has the closest relations with the Toho Denryoku Kabushiki Kaisha, is also a combine of three companies in the western district of Japan, viz. Kiso Denki Kogyo Kabushiki Kaisha, Osaka Soden Kabushiki Kaisha and Nippon Denryoku Kabushiki Kaisha. The company has recently laid down gigantic plans for establishing a water power plant of 600,000 kilowatt. It has a very advantageous situation, being near a district where water is easily available. On the completion of the projected scheme, they are expected to undertake the huge task of transmitting current 300 miles to Tokio and, on the other hand, to Osaka.

Future of Hydro Electricity in Japan.

At the time of the establishment of the Tokio Dento Kabushiki Kaisha there was no special law or regulation in regard to electrical enterprise in Japan. It was not until 1896 that the Electricity Supervision Rules were issued. No encouragement was offered by the Government after the issue of the Rules, and the industry appeared to be rather neglected. However, as the industry improved and developed and was considered of vital national importance, the Government took action. It appointed an Investigation Committee on hydro electricity in 1910 to enquire into the prospects of the development of that industry. The Committee issued an interim report after a three years' investigation

all over Japan, which cost yen 700,000. According to the report the available places for water power generation were 850, from which a total horse-power of 2,295,000 could be raised. It was, however, firmly believed at the time of this investigation that the total horse-power available from these sources was nearly 5,000,000 horse-power, including the 2,339,300 horse-power from projected works which had been authorized. In 1921 the second investigation was made, according to which the total horse-power could be 7,850,000. Thus, the possibilities of water power electricity in Japan are colossal, owing to her special geographical features and her large rainfall, the average of which is 1,700 millimetre a year, or twice as much as the world average record of rain, which is 800-900 millimetre.

This natural advantage will undoubtedly be exploited to a far greater extent as the price of coal increases and the methods of electrification become more popular. It is undeniable that a cheap supply of water electricity is urgently needed at present, not only as a part solution of the fuel question, but because the present cost of fire electricity is so high. As improved technical appliances are adopted and scientific system of management is undertaken, new and greater demands for electricity may follow, not only for lighting and heating purposes, but also for manufacturing, mining, transport and all other industries. The tendency towards electrification will grow as soon as a cheap and adequate supply of electricity is assured. It is also not improbable that such cheap supply would usurp the place of gas in domestic heating and for cooking uses.

The Tokio Dento Kabushiki Kaisha has maintained an increasing supply of electricity even during the post-war depressed period, the increase of supply of electrical power being almost 6 per cent and of lighting 7 per cent every year. The increase cannot be spoken of as net increase due to new demand, because it might have been obtained partly as a result of competition with other companies. It is needless, however, to add that a cheaper rate of electricity will cause its wider use in every way and ultimately cause its universal adoption.

CHAPTER IX

SUGAR INDUSTRY

IT is noteworthy that the sugar industry of Japan started developing on modern lines after the acquisition of Formosa, which was ceded to Japan by China by the Shimonoseki Treaty, the island being well known as a suitable place for the cane sugar industry. The industry has grown rapidly since the island came into Japan's possession, and has become one of the most successful colonial industries Japan ever undertook. On the contrary, the sugar beet industry has progressed very slowly, although it was established long before cane sugar, and at the moment the cane sugar industry in Japan has greater importance than the beet sugar.

§ I. RAW SUGAR INDUSTRY

I. *Sugar Industry in Japan Proper.*

The cane cultivation in Japan proper was already in existence in the early part of the feudal age. During those days the industry did not show any significant progress, owing to the fact that Japanese soil and climate are not suitable for sugar cane cultivation, and also to the fact that it remained in the small scale family state for such a long time, although aided and subsidized by the feudal lords.

It is said that a quantity of refined sugar was first brought to Japan by a Chinese about A.D. 754, as a sort of tribute; and during the time of the Ashikaga Shogunate sugar was one of the principal imported articles. History tells us that at that time this commodity was used only as a luxury and medicine among the better class people.

The story goes that the method of manufacturing sugar was first introduced into Japan about three hundred years

ago through a very curious incident. A Japanese who had been wrecked on his way to the Ryukyu islands drifted to China, and during his stay there managed to study the manufacturing of sugar from the cane. Owing to the Chinese law prohibiting the taking of the new invention of sugar manufacturing out of the country in order to keep it quite a secret, he had to smuggle himself out of China with a few young canes. On his return to Japan he planted these canes, and the growth was very successful. He succeeded in producing sugar from the knowledge gained in China. After this sugar cane plantations rapidly spread to many districts in the southern parts of Japan. With the aid and encouragement of the feudal lords in the districts, sugar became an important local product of Japan before the Meiji Restoration (1868). After the Restoration, however, the sugar industry in Japan rapidly declined except in a few semi-tropical islands, such as Oshima, Okinawa and Bonin Archipelago. The decline was due to the rapid increase of foreign sugar import and the unsuitability of the Japanese climate for cane plantations. Excepting Formosa, the Okinawa islands are at present the most important for sugar production in the empire of Japan.

The sugar industry of the Okinawa islands was established as early as 1878 with modern methods of sugar production. The assistance of the Government in financing the firms concerned, in extending cane plantation and in purchasing increased amounts of sugar manufactured there, enabled the industry in the Okinawa region to develop yearly. In 1906 the Government established the Sugar Research Bureau and also built a Government sugar factory in Okinawa, for the purpose of putting into practice the result of research work. This research work of the Government proved beneficial for the private sugar concerns to the extent of causing systematic plantation by which the scientific process of sugar manufacturing and the better organization of the industry were obtained.

Thus it will be seen that the development of the home sugar industry directly or indirectly relied upon the aid and encouragement of the Government. Moreover, after the Research

Bureau was closed in 1912 on account of the rapid progress of the industry in the colony of Formosa, the industry in the Okinawa islands suddenly slackened its pace of development. Although it is not to be compared in regard to its industrial scale and prospects of development with Formosa, Okinawa went ahead as an important sugar district, and rose above all others in the home sugar districts. At the present time there are three sugar companies and eleven factories, whose manufacturing capacity of raw sugar is about 3,550 tons a year.

OUTPUT OF RAW SUGAR OF JAPAN PROPER

Years.	Area of Cane Sugar Cultivation (Cho).	Output of Sugar Cane (1,000 Kin)	Output of Raw Sugar (1,000 Kin).	Molasses. (1,000 Kin.)
1906-10 (average)	18,609	1,152,063	93,064	104
1911-15	22,050	1,504,729	118,282	1,643
1916-20	28,392	1,908,703	157,741	6,220
1921	33,903	1,849,785	167,273	15,403
1922	29,876	1,233,573	137,609	—

2. *The Raw Sugar Industry in Formosa.*

The sugar industry of Formosa was well known, and this product was the chief and most important even before Formosa was ceded to Japan. The origin of the sugar cultivation was as early as the 16th century; and the industry was in a state of development when the Dutch explorers settled there about 1624, but they improved the industry during their forty years' stay in Formosa. However, after China again took possession of the island from the Dutch people the industry remained in an insignificant state for more than two hundred years.

(a) General Development.

After the Japanese-Chinese War the Japanese Government paid special attention to this industry, and formed the conclusion that it was the most important enterprise in Formosa, and well worth developing from the point of view of colonial policy. In 1902 the Government introduced the protection policy of both colonial and home sugar against foreign products. This policy seemed to provide great

facilities and help to the then beginning stage of the development of the industry in the island. As a consequence, firms were promoted in quick succession with a vast amount of capital, and the manufacturing capacity was increased and volume of sugar output multiplied.

The comparison between the early stage of the sugar cultivation and the recent development can be clearly seen in the following table :

THE DEVELOPMENT OF THE SUGAR INDUSTRY IN FORMOSA

Years.	No. of Factories.	Authorized Capital (Yen).	Cane Crushing Capacity Per Day. (Ton).
1897 . . .	1	1,000,000	300
1906 . . .	8	6,222,000	1,516
1910 . . .	21	62,380,000	17,250
1917 . . .	37	115,900,000	28,500
1920 . . .	42	262,700,000	33,000
1922 . . .	45	263,500,000	35,050
1923 . . .	48	281,200,000	36,600

Along with the increase of capital and productive capacity, the extensive use of modern machinery caused a marked improvement in the quality of products. From the point of view of manufacturing methods the industry has developed from cottage works to a large scale factory

OUTPUT OF UNREFINED SUGAR AND MOLASSES IN FORMOSA

Years.	Unrefined Sugar (1,000 Kin).	Molasses (1,000 Kin).	Total (1,000 Kin).
1898 . . .	—	68,350	68,350
1902 . . .	1,850	89,020	90,870
1910 . . .	197,120	143,282	340,402
1913 . . .	105,048	14,102	119,150
1914 . . .	222,364	28,915	251,279
1915 . . .	311,750	35,696	347,446
1916 . . .	484,251	50,856	535,107
1917 . . .	676,902	86,589	763,491
1918 . . .	496,758	76,778	573,536
1919 . . .	435,905	50,452	486,357
1920 . . .	351,481	20,535	372,016
1921 . . .	401,754	19,271	420,925
1922 . . .	572,980	14,777	587,757
1923 . . .	581,381	10,860	592,241

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system, under which firms are now able to produce what is described as "ontrifugal" besides molasses, or, in other words, unrefined sugar together with what is commonly termed black or brown sugar. The above tendency and the increase of sugar output in Formosa can be seen in the previous table.

(b) Establishment of Sugar Companies.

The first sugar establishment which was formed in Formosa with modern machinery under factory system, was the Taiwan Seito Kabushiki Kaisha (Formosa Sugar

MAIN SUGAR COMPANIES ESTABLISHED DURING 1901-1913

Companies.	Established.	Authorized Capital. (Yen).	Productive Capacity (Ton).	Remarks.
Taiwan Seito K.K.	1901	1,000,000	300	Purchased several small companies during 1901-1913.
Shinko Seito K.K.	1905	240,000	156	Amalgamated with Meiji Seito K.K. in 1910.
Yensuiko Seito K.K.	1905	300,000	350	
Dainan Seito K.K.	1906	350,000	180	
Meiji Seito K.K.	1908	5,000,000	600	
Toyo Seito K.K.	1909	5,000,000	1,000	
Dainihon Seito K.K.	1909	12,000,000	1,200	
Niitaka Seito K.K.	1911	5,000,000	750	
Rin-Hon-Gen Seito K.K.	1911	2,000,000	750	
Hokkuko Seito K.K.	1912	3,000,000	1,000	Amalgamated with Toyo Seito K.K. in 1914.
Toroku Seito K.K.	1912	3,000,000	500	
Daihoku Seito K.K.	1912	3,000,000	500	Amalgamated with Taiwan Seito K.K. in 1914.
Teikoku Seito K.K.	1912	5,000,000	750	Amalgamated with Minami-Nippon Seito K.K.
Chuwo Seito K.K.	1912	5,000,000	750	Amalgamated with Meiji Seito K.K. in 1913.
Yeiko Seito K.K.	1912	600,000	300	
Horisha Seito K.K.	1912	2,000,000	300	
Minami-Nippon Seito K.K.	1913	5,000,000	350	
Daito-Takushoku Seito K.K.	1913	7,500,000	600	Amalgamated with Yensuiko Seito K.K. in 1914.

Manufacturing Co., Ltd.). It was established in 1901 with a capital of yen 1,000,000. The output of unrefined sugar produced by this company was only 1,850,000 kin in 1902. However, rapid development was made soon after this,

especially during the boom which followed after the war with Russia, when new companies were promoted in quick succession. The period of 1901-1913 is noteworthy in the industry, as most of the larger companies were established during these years.

During and after the Great War only three new companies of considerable size were formed. On the other hand, increase of capital by the old establishments and amalgamation of small companies took place in accordance with the increase of demand for sugar in the home as well as foreign markets. It must be remembered, however, that the period of 1914-1920 was most remarkable in respect of the general development of the Japanese sugar industry, not only in Formosa, but also in all other parts of the empire. Several beet sugar companies that were established in the home country regained their activity, which had greatly declined before the War. A number of sugar factories were also built in Manchuria and Hokkaido. The most noteworthy event recorded was that several Japanese sugar companies were formed in the South Sea Islands and Sumatra with Japanese capital, and were entirely under Japanese working. Such an external expansion had been unheard of before the Great War. The main sugar companies promoted during 1914-1920 are as follows :

Companies.	Place.	Authorized Capital (Yen).	Paid-up Capital (Yen).
Daito Seito K.K.	Formosa	3,500,000	1,750,000
Shinchiku Seito K.K.	Formosa	7,500,000	1,875,000
Nanman Seito K.K.	South Manchuria	10,000,000	5,000,000
Sumatra Kogyo Seito K.K.	Sumatra	5,000,000	1,250,000
Java Seito K.K.	Java	10,000,000	2,500,000
Hokkaido Seito K.K.	Hokkaido	10,000,000	4,000,000
Nippon Kansai K.K.	Honshu	10,000,000	2,500,000

(K.K.=Kabushiki Kaisha=Company Limited.)

In the meantime, the companies in Formosa showed unprecedented activity, and maintained a steady increase of productive capacity. Moreover, a striking fact which occurred during this period was the disappearance of small companies, owing to the amalgamation entered into by big

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ones, and the consequent increase of invested capital of the existing companies, which can clearly be gauged by the following table :

INCREASE OF CAPITAL OF LEADING SUGAR COMPANIES IN FORMOSA (1,000 yen)

Companies.	1917.		1923.		Facto- ries.	Cane Crushing Capacity Per Day (Ton).
	Authorized Capital.	Paid- up Capital.	Authorized Capital.	Paid- up Capital.		
Taiwan Seito K.K.	29,800	20,835	63,000	38,100	11	9,080
Dainihon Seito K.K.	18,000	12,000	27,250	20,062	2	2,200
Toyo Seito K.K.	11,000	7,962	36,250	22,032	6	4,450
Yensuiko Seito K.K.	11,000	7,125	25,000	18,155	6	4,500
Meiji Seito K.K.	12,000	8,925	37,500	22,000	5	5,100
Teikoku Seito K.K.	7,000	5,250	18,000	11,250	5	3,000
Niitaka Seito K.K.	5,000	3,500	28,000	10,750	3	3,050
Dainan Seito K.K.	13,000	8,110	20,250	16,937	3	1,570
Shinko Seito K.K.	600	600	1,200	1,200	1	850
Rin-Hon-Gen Seito K.K.	3,000	1,500	3,000	1,500	1	750
Daito Seito K.K.	3,550	1,750	1,750	1,750	2	500
Shinchiku Seito K.K.	—	—	7,500	1,875	1	500
Nihon Takushoku	—	—	10,000	3,000	1	750
Total (including others)	115,900	77,557	281,200	169,205	48	36,600

Owing to the development of the Formosan sugar industry, which has, as stated, been encouraged by the Government's protective policy towards home industry, and also by the rapid increase of home and foreign demand, the volume of sugar imports from foreign countries has gradually decreased during recent years. The raw sugar output of Formosa has so increased that the greater portion of home consumption of raw sugar is supplied by the yearly output.

CONSUMPTION OF RAW SUGAR OF JAPAN (1,000 kin)

Years.	Home Pro- duction.	Home Con- sumption.	Import From.	
			Formosa.	Foreign Countries.
1898-1900 (average)	98,764	512,981	34,134	380,419
1901-1905	83,958	487,283	53,367	357,076
1906-1910	93,064	495,182	164,651	293,095
1911-1915	118,282	514,423	264,394	288,704
1916-1920	158,142	712,712	457,368	283,723
1921	104,799	955,694	424,379	508,980
1922	137,609	1,213,397	563,367	656,151

(c) Sugar Subsidy in Formosa.

Thus, the sugar industry in Formosa has made rapid progress in every line of undertaking. However, what must not be overlooked is that such progress is mainly due to the Government's encouragement and the subsidies which undoubtedly were the cause of the development of the industry. As mentioned elsewhere, the Government introduced the sugar tariff in 1902, and the Sugar Subsidy Act of Formosa, which was made law in June of the same year, set down detailed rules with regard to the grant of subsidies and Government aid to the industry. The main heads of the Act were :

Subject to the provisions of the Act, the Government will give a bounty to a person or persons engaged in sugar cane cultivation and raw sugar production in respect of—

1. Cost of young canes.
2. -Cost of manure.
3. Cost of cultivation.
4. Cost of machinery and implements of sugar manufacturing.

At the same time the revised duty on foreign refined sugar also gave a great advantage to the industry. The total amount of the subsidy granted during 1902-1911 reached yen 12,388,726. However, the Act was modified in 1917, in order to adjust it to the less urgent needs of the developed industry. The amount of subsidy was reduced and the number of items to which the subsidy would be granted was greatly limited, and only part funds were granted for irrigation, drainage, plantation of young canes and the manufacturing of rock candy sugar.

The Act was again altered in 1922, when the bounty on rock sugar was abolished, and that on plantation of young canes was replaced by the free supply of such canes subject to the provisions of the Act. The main clauses of the present sugar subsidy Act may be summarized as follows :

1. The Government shall supply young canes free of charge to a person or persons undertaking the

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industry with modern machinery and owning their own cane farms.

2. Five-tenths of the cost of work of drainage and irrigation on cane farms shall be subsidized and machinery and implements which are necessary in regard to the works may be loaned or given according to the circumstances of the case; and the total subsidies shall not exceed yen 150,000 a year.
3. Sugar manufacturing machinery and implements which belong to the Government may be lent to anyone whom the Government deems suitable.

In addition, the Government limited the area within which certain sugar companies could obtain sugar canes, in order to prevent competition for raw canes and thereby sending up the price of the canes. This limitation proved beneficial in the development of cane plantation, as such companies paid greater attention to its cultivation, and encouraged the farmers in their area to produce sugar canes as largely as possible. The regulations regarding the inspection of imported young canes are still strictly in operation.

(d) The Present Position.

We have observed in the foregoing descriptions that the industry has shown a great advance so far as production is concerned. It must not, however, be overlooked that the recent output of Formosan raw sugar has not increased in just proportion to capital and productive capacity. The area¹ of sugar cane plantation has gradually decreased since

¹ AREA OF SUGAR CANE PLANTATION AND COST OF SUGAR PRODUCTION

Years.	Area of Sugar Cane Plantation: (Ko).	Raw Sugar Output per Ko. (Kin).	Cost of Raw Sugar Production (per Picul). (Yen).
1917	129,662	65,000	6.73
1918	150,450	45,000	9.55
1919	120,410	47,000	11.96
1920	108,396	40,000	20.77
1921	118,888	41,000	23.63

(Ko=about 473.4 sq. yards.)

1917, and the sugar production per ko has shown a downward tendency. Since the total output of raw sugar reached 763,000,000 kin in 1917 it has never exceeded it. The reasons for this are as follows :

1. The fact that sugar cane plantations have gradually been converted into rice farms undoubtedly is the cause of the decrease of area of cane plantation.
2. Rapid rise of the cost of raw sugar production.
3. Competition of cheap raw sugar from abroad.

Despite the high tariff¹ barrier against imported sugar the companies in Formosa have often been threatened by the keen competition of foreign sugar, especially Java sugar.

§ 2. REFINED SUGAR INDUSTRY

It was not until 1894 that Japan was able to manufacture refined sugar. In this year a sugar refining company named Dai-Nippon Seito Kaisha was established and commenced business on the most up-to-date lines. This company obtained a cheap supply of raw sugar from Java, the duty on which was very low, so that they were able to carry on their new undertaking at a profit, despite the keen competition from imported sugar, which was mainly European beet sugar. It was a well-known fact, though, that this company was very hard pressed in the early stage of its establishment, by the competition from foreign goods, especially German beet sugar. Fortunately, in 1902, a high duty was imposed on imports of refined sugar, and frequent higher revisions followed and also "drawback"

¹ PRESENT RATES OF SUGAR TARIFF

Kinds of Raw Sugar.		Rate of Duty Per 100 Kin (Yen).
1.	Under No. 11 Dutch standard	2.50
2.	Under No. 15 Dutch standard	3.10
3.	Under No. 18 Dutch standard	3.35
4.	Under No. 21 Dutch standard	4.25
5.	Other	4.65
6.	Rock candy sugar, cube sugar, loaf sugar and similar sugar .	7.40
7.	Molasses—	
	(a) Containing not more than 60 per cent by weight of sugar calculated as cane sugar	1.30
	(b) Other	2.50

of the duty imposed on imported raw sugar was granted to the refiners. Consequently, sugar refiners in Japan were greatly benefited, and they were soon in a very satisfactory position. By 1902 four companies were amalgamated by the Dai-Nippon Seito Kabushiki Kaisha, and from 1907 the company earned big profits judging by the dividends disclosed.

On the other hand, the raw sugar industry in Formosa, as mentioned elsewhere, began to develop on a large scale soon after the war with Russia, and its sole purpose was to supply raw material to home refiners. But the question of the drawback of the duty on imported raw sugar cropped up between the refiners and Formosan raw sugar companies, because the refiners preferred supplies of Java sugar to Formosan, on account of the former's superior quality, low price and sufficient supply. On the contrary, the Formosan sugar factories were almost dependent on home demand, and so long as the drawback of the sugar duty continued the industry in Formosa would be greatly affected, as Java sugar would be supplied much cheaper. Therefore, it is not to be wondered at that the companies in Formosa insisted on either the abolition or a considerable reduction of the drawback of the sugar duty, in order to curtail the demand for foreign material for supplying the home refiners. Both the refiners and Formosan companies remained firm in their attitude, and urged the Government to take adequate steps regarding the sugar industry. After deliberate consideration the Government decided to revise the amount of drawback, according to the use of refined sugar which is manufactured from imported raw sugar. Thus :

	Drawbacks.	
	For Home Consumption (100 Kin).	For Export (100 Kin).
1. When imported raw sugar of under No. 8 Dutch standard is used	yen 1.45	yen 1.65
2. When imported raw sugar of No. 8-15 Dutch standard is used ..	1.95	2.25

In the case of both home consumption and export of manufactured sugar made of imported raw material, there was a difference of from yen 0.20 to yen 0.30 on the drawback. This was carried on up to July, 1911, when the present tariff came into operation.

While the Dai-Nippon Seito Kabushiki Kaisha was practically monopolizing the home sugar market and making considerable profits under the protective policy, two new companies were established, one of which was the Kobe Seito Kabushiki Kaisha and the other the Yokohama Seito Kabushiki Kaisha. Both companies formed in 1909, and started competition with the older company. The overproduction which ensued was greatly augmented by anticipatory imports of raw sugar in prospect of the proposed increase in the tariff from 1911. Stagnation of trade was followed by cheap sale, which resulted in the companies finding themselves in financial difficulties. They were forced to come to an agreement so as to avoid competition as far as possible, to protect their common interests and to sell their goods in common sale houses. However, the downward tendency could not be stopped, and at last it became obvious that the entire reorganization of the Dai-Nippon Seito Kaisha, which was then on the verge of bankruptcy, would have to be undertaken. Thanks to the financial aid of prominent business men, the company managed to get through this critical time. The other two, which were also in a very bad state, were eventually purchased by leading Formosan sugar companies in 1911.

All this time there had been a distinct difference between the refiners and raw sugar companies. However, after 1911 the companies concerned in the industry began to engage in both refining and producing raw sugar. For instance, the Dai-Nippon Seito Kaisha opened sugar cane farms in Formosa. Meiji Seito Kaisha and Taiwan Seito Kaisha, which are the leading sugar companies at present, purchased respectively the Yokohama Seito Kaisha and the Kobe Seito Kaisha, in order to engage in the refining industry. Thus the interest in common on both sides became so close that they easily agreed to form what was called the

Japanese Sugar Association in 1911 for the purpose of checking foreign raw sugar from coming into the Japanese market. As a consequence, there occurred a rapid decline¹ in the import of raw sugar to Japan. Before the Association was formed, that is before 1910, the raw sugar imported was chiefly foreign products, not Formosan. However, from that time onwards the proportion was entirely reversed.

Before the Great War there were only five refining sugar factories in Japan. The Dai-Nippon Seito Kaisha had three factories and Taiwan Seito Kaisha and Meiji Seito Kaisha had one each. Their total melting capacity² was only 890 tons a day. The number of refining companies³ increased afterwards to seven, which had between them thirteen factories with a melting capacity of 1,820 tons a day in 1921.

Although the refiners in Japan were placed in a somewhat depressed position after the Great War ended, owing to the general economic panic, which brought about over-

¹ IMPORTS OF RAW SUGAR (1,000 kin)

Years.	Foreign Raw Sugar.	Formosan Raw Sugar.
1906-1910	293,095	164,651
1911-1915	288,704	264,394
1916-1920	283,723	457,368

² INCREASE OF MELTING CAPACITY PER DAY

Years.	Melting Capacity (Tons).
1914	890
1915	1,120
1916	1,480
1917	1,480
1918	1,500
1919	1,420
1920	1,670
1921	1,820

³ CANE SUGAR REFINING COMPANIES IN JAPAN (1921)

Companies.	Authorized Capital (Yen).	No. of Factories.	Melting Capacity Per Day (Tons).
Dai-Nippon Seito Kaisha	27,250,000	3	650
Taiwan " "	63,000,000	3	430
Meiji " "	37,500,000	2	260
Teikoku " "	18,000,000	1	100
Niitaka " "	28,000,000	1	100
Yensuiko " "	25,000,000	1	120
Taisho " "	7,000,000	2	160
Total	205,000,000	13	1,820

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production of sugar and stagnation of its export, they soon regained their footing to a satisfactory state. It will be seen that apart from some negligible set-backs the industry has shown steady progress and its products have become more refined year by year. At present not only is exported sugar mostly of the first grade, but the supply for home consumption is no longer medium, but fully refined.

OUTPUTS, HOME CONSUMPTION AND EXPORT OF REFINED SUGAR
(1,000 kin)

Years.	Outputs.	Home Consumption.	Exports.
1913 . . .	274,787	127,142	90,755
1914 . . .	318,658	146,326	168,766
1915 . . .	267,826	144,285	131,263
1916 . . .	257,922	245,246	116,508
1917 . . .	347,326	166,163	146,194
1918 . . .	400,895	187,453	220,904
1919 . . .	414,850	254,096	190,878
1920 . . .	371,458	283,212	109,500
1921 . . .	337,503	295,039	100,544
1922 . . .	480,000	474,033	79,305

§ 3. BEET SUGAR INDUSTRY

1. *Failure of Japanese Beet Sugar Industry.*

The commencement of the beet sugar industry in Japan dates as early as 1872. After the Restoration (1868) the cane sugar industry of Japan, which had been exclusively protected by the feudal Governments, was badly hit by the competition of imported beet sugar, because the industry was then in a very primitive state, and the subsidies had ceased with the abolition of the feudal system. In 1872 the Government imported beet-roots from England in order to establish a beet sugar industry, and from this onwards official policy was active in the promotion of this industry. The Government built beet sugar factories in the Iwate and Hokkaido districts, but they resulted in complete failure. The factory in the latter district was equipped with French machines, which had crushing capacity of 30,000 kan of beet-root a day of twenty-four hours. For fourteen years after its establishment in 1881, the factory was working under Government management; but it showed a deficit every year, owing to unsatisfactory beet crops and inferior sugar products, and the concern was finally closed down in 1895.

In 1890 a private beet sugar company, Sapporo Seito Kaisha, was established in Hokkaido, with a capital of yen 800,000. The company was managed by a German expert, but it met with the same fate as the Government undertakings and closed down in 1901.

Thus, both Government and private beet sugar enterprises were failures, and this line of production received no attention for a considerable period. In fact, it was not till the Great War broke out that another effort was made to establish a beet sugar industry.

The causes of the failure were :

- (a) Unsuitable land was chosen.
- (b) Lack of transport.
- (c) Inexperience of beet cultivation and lack of modern methods of beet sugar manufacture.
- (d) Scarcity of labour in Hokkaido, which was then the main district for beet growing.
- (e) Ignorance of the use of by-products.

Despite the failure of the beet sugar industry the Government continued its research work in various districts, and some parts of Hokkaido and Chosen were considered to be suitable for the industry if properly worked. However, being discouraged by the former failure and being indifferent on account of the rapid development of the Formosan cane sugar industry, the Government totally neglected beet sugar. No industrialists attempted to re-establish the industry, as it was believed to be one which could not be worked to commercial advantage.

2. *Revival of Beet Sugar Industry.*

But on the advent of the Great War the industry was revived owing to the rapid increase of sugar prices, to increased demand for Japanese sugar and to the fact that the scope for further expansion in the Formosan cane sugar industry was not adequate to cope with the war time demand. During the War several beet sugar companies were established in Hokkaido and Chosen, also in South Manchuria, all of which were financially associated with the

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leading Formosan sugar companies. At present there are four beet companies,¹ whose capital amounts to yen 32,000,000 in all, and whose crushing capacity of beet-roots is estimated at 2,300 tons a day.

In spite of the short period since the industry was revived, the progress made has been considerable and output has gradually increased. The companies are now able to organize the industry on a scale which is totally different from the pre-war efforts.

In the beginning the companies experienced a difficulty in growing beets, as they require special skill in cultivation and very intensive methods of farming, of which the farmers in Manchuria, Chosen and Hokkaido were quite ignorant. As a matter of fact, farmers were unwilling to engage in the business at first, because they were uncertain of the result of beet growing. However, after great encouragement and deliberate research work by the companies, beet growing gradually became popular with the farmers, who have now become successful beet growers. Take, for instance, the struggle of the South Manchuria Beet Sugar Co., which is the most successful one. This company built several model beet farms in Manchuria, in order to show the proper methods of cultivation to Chinese farmers and selected beet seeds, which were distributed to the farmers at a very low price. The raw material was mainly supplied by those beets purchased from the farmers, and not by those grown on the company farms. The result was successful. The area of cultivated land and the output of beets increased rapidly, and polarization of beet-roots which improved the quality of the sugar products also rose considerably. Four years after the company was established, it was in a very sound position, and earned considerable profits. It had no difficulty in getting supplies of raw material; its cost of

¹ JAPANESE BEET-ROOT SUGAR COMPANIES

Companies.	Estab- lished.	Place of Factories.	Authorized Capital. (Yen 1,000).	Crushing Capacity (Per Day).
South Manchurian Seito K.K.	1916	S. Manchuria	10,000	500
Chosen Seito K.K.	1917	Chosen	2,500	600
Hokkaido Seito K.K.	1919	Hokkaido	10,000	600
Nippon Beet Sugar Co.	1919	..	10,000	600

production was lowered, and the methods of manufacturing sugar were greatly improved.

BET ROOTS CULTIVATION

Years.	Area (Tsubo).	Raw Sugar Output (Kin).	Polarization of Beet Roots (Percentage).
1919 . . .	60,000	360,000	15
1920 . . .	1,350,000	600,000	18
1921 . . .	1,650,000	720,000	18.5
1922 . . .	1,740,000	790,000	18.5

(Tsubo=3.95369 square yards.)

The companies in Hokkaido and Chosen have not yet developed to a satisfactory degree, owing to the shortness of their experience compared with the Manchurian company. They are still in an experimental stage, and their success is entirely dependent on the progress they make in the near future. The two companies in Hokkaido commenced their work in 1920 with carefully thought out plans. They selected land for beet growing, and constructed special railways for the transport of beet-roots, in order not to repeat the previous failure. According to the following table their efforts have apparently met with some success :

	Hokkaido.	Seito K.K.	Nippon Beet Sugar Co.
Area in cultivation (Cho)	2,300	4,047	2,367
Output of beet (1,000 kin)	10,051	532,163	39,253
Output of raw sugar (1,000 kin)	4,063	46,200	2,838

(Cho=2.45064 acres.)

The Government that remitted the import duty on beet root seeds now recognized the necessity of protecting the industry in order to encourage further development. It is said that the Government intends to introduce a Bill in Parliament which will authorize the granting of a subsidy to beet growers, according to the area under cultivation. It is believed that should the present progress of the industry continue without further set-backs, beet sugar manufacturing gives promise of becoming of great importance in the Japanese sugar industry.

PART VI

PRESENT POSITION OF INDUSTRY AND TRADE IN JAPAN

HAVING seen the development of foreign trade and the leading industries of Japan in the previous chapters, we can also see the present industrial tendency of Japan, which is become a manufacturing instead of an agricultural country. The industrial progress which Japan has achieved is remarkable in the sense that it has developed in the short period of just over half a century.

However, there are many reasons under the surface which do not allow us to be optimistic with regard to the present as well as the future of Japan's industry and foreign trade. It must be remembered that the rapid increase of population, for which there is no outlet, and the decline of Japanese agriculture have caused grave social, political and economic problems. The high standard of living and an extravagance which does not correspond with the present productive capacity of Japan have encouraged increased imports, and the post-war stagnation of industry has contributed to the recent vast excess of imports.

CHAPTER I

ADVERSE TRADE

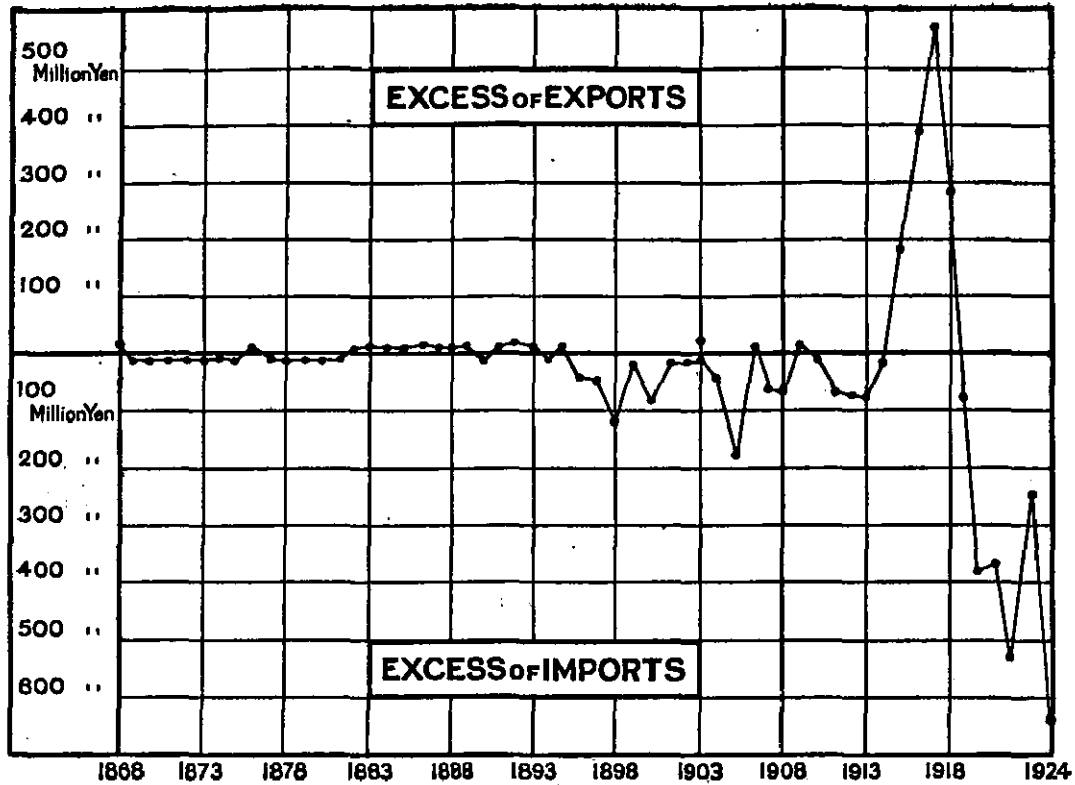
IT is obvious that the increase of foreign trade is a direct sign of industrial development. But the continuous excess of imports is by no means "favourable" to a country like Japan, though an excess importation of goods, such as raw cotton, metals and machinery, may be regarded as ultimately increasing the productive capacity of the importing country. In fact, a large portion of Japan's imports, as stated before, consists of raw material and machinery. They are necessary imports, and if not entirely re-exported in the form of manufactured articles, provide employment and profit for Japanese labour and capital. As a rule, a young country during the early stages of its development will normally import a larger amount of goods than it exports. Japan is by no means fully developed at the present time. Therefore, it seems quite an ordinary phenomenon that she should continue having an excess of imports over exports in the course of the development of industries. So long as the excess of imports (including the import of foreign capital) creates future productive capacity, this explanation is quite acceptable. However, observing the recent alarmingly large adverse trade balance, no one can deny that one of the principal causes of the excess of imports is the growing extravagance of the consuming public in purchasing foreign-made luxuries. It is, therefore, interesting to watch the effects of the various fiscal measures by which the Government have sought to curtail the purchase of luxuries from abroad. If, however, the general public do not abandon the high standard of living to which they have now grown accustomed there will remain the problem of finding the money to pay for the imported goods.

After all, a country's foreign trade differs in no way from individual business, as what it owes to other countries must be paid by means of either export of goods, gold or services. What Japan has done during the last fifty-seven years in respect of adverse trade in order to meet the debts towards other countries was to raise foreign loans, which were used for the development of industry and commerce. It can at least be said that the excess of imports over exports has not contributed fully to the future progress of national economy.

If we study the balance of foreign trade of Japan for the last fifty-seven years we see that thirty-nine years show an excess of imports and eighteen excess of exports. The chart opposite reveals the general character of the Japanese trade balance during the above-mentioned period. The chart does not show the aggregate volume of exports and imports, but merely the difference between the two. According to the chart we will divide the Japanese trade into five periods from the trade balance point of view :

Period.	Excess of Imports (-) and Exports (+) (Yen).
1. 1868-1881	77,643,000 (-)
2. 1882-1893	69,813,000 (+)
3. 1894-1914	933,041,000 (-)
4. 1915-1918	1,408,048,000 (+)
5. 1919-1924	2,261,813,000 (-)
Total excess of imports for the last 57 years	1,794,636,000 (-)

During the first period 1868-1881, imports exceeded exports by about yen 4,000,000 to yen 9,000,000 yearly, with the exception of two years, 1868 and 1876, and the adverse balance of trade reached yen 77,643,000 in the aggregate during these fourteen years. The reason for this was mainly due to the fact that the currency system was not satisfactory. Although unification of the currency was achieved and new coins minted to fineness of 900 to 1,000, and the decimal system adopted for all denomination soon after the Restoration, the Government found it impossible to place paper money on a convertible basis, in order to



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cover the rapid increase of expenditure, owing to the civil war of 1877 and various administrative reforms relating to the new era. For this purpose the Government issued inconvertible paper money to a considerable amount. At the same time the national banks which had been established according to the Banking Law¹ of the fifth year of Meiji (1872) and modelled on the banking system of the United States issued their own paper money.

When Government notes remain inconvertible, the bank-notes must also be inconvertible. So on account of the civil war the money market was inflated with inconvertible paper money. The consequence was that paper money depreciated as low as 80 per cent, the price of commodities soared and the balance of trade became adverse, for the settlement of which gold and silver coins were exported to the amount of yen 70,800,000 during the period.

Between 1882-1893 troubles incidental to the commencement of the new era began gradually to right themselves, and the depreciated currency was adjusted. In 1882 the Bank of Japan was established. The bank became a central agency in the financial administration of Japan, and was able to issue convertible paper money in 1884, after which the national banks lost their issuing privileges, and their notes were withdrawn from circulation. The bank received and disbursed all Government money, its paper money was kept at par value and coins came into the market again. At the same time the Government greatly encouraged the export trade, in order to draw money from foreign markets. It was during this period that the Yokohama Specie Bank was established as the chief agent of Japan's foreign commerce, and operated its business of exchange in pursuance of the new financial policy. As a consequence the foreign trade of Japan during this period showed a favourable balance, i.e. exports exceeded imports by yen 69,813,000 and gold and silver amounting to yen 27,096,000 was imported from foreign markets.

¹ According to the law the national banks had issuing power on the security of public bonds to the amount of 80 per cent, the paper being convertible only by Government currency.

This favourable trade, however, did not last long, and the excess of imports occurred again in 1894 and continued up to 1914. During this period the Chinese and Russian Wars broke out. It is, therefore, convenient for us to observe this period from two points of view, one of which is 1894-1903 and the other 1904-1914. As has often been described, the wars which Japan encountered in the past fostered trade, as can be seen by observing Japanese industrial and trade developments. The Japanese-Chinese War (1894-1895) caused an entire change of national economy; the state of trade after the war greatly altered in its character and distribution, as compared with the preceding periods. The rapid stride of new industries necessitated the importation of machinery and scientific instruments. As a consequence, imports exceeded exports by yen 352,000,000 during 1894-1903. It must not be overlooked that the excess of imports was at the same time encouraged by the war indemnities paid by China and the raising of foreign loans, the amount of which reached the total of yen 183,500,000 in 1903. This same tendency of import excess was stimulated still more after the Japanese-Russian War (1904-1905), it continued right up to 1914, and the excess was more than yen 581,000,000 during this period.

Many new industries and works were established and old ones expanded, for which material and machinery were imported. Thus the Government had to raise foreign loans on account of the continuous adverse balance of trade. Up to 1914 the amount of foreign loans promoted by the Government reached to about yen 1,800,000,000, some portion of which was spent for military necessities supplied by foreign countries during the war, while part was kept as specie reserve in England.

The outbreak of the Great War, however, changed the situation remarkably, and the trade balance of Japan for the four years 1915-1918 was marked by an excess of exports. The aggregate of imports and exports had an average yearly value of yen 1,163,985,000 during 1910-1911, yet during 1915-1918 it reached the annual average of yen 2,348,428,000. This increase, striking at it is, is not

more significant than the change which appeared in the relative importance of exports and imports. During this period the excess of exports amounted to yen 1,408,000,000, which brought, on the other hand, an excess of gold imports amounting to yen 300,000,000. The balance of these two, i.e. yen 1,108,000,000, was left in foreign countries as credit, by which foreign borrowing on the part of the Government before 1914 was partly redeemed and investment in foreign countries was made.

This favourable turn of trade did not last long, and the balance of trade was reversed again as soon as the War was over. It has continued so ever since up to the present, and it does not seem likely to change in the near future. The excess of imports reached yen 2,261,813,000 between 1919 and 1924, which surpassed the excess of exports during the War by about yen 853,000,000. However, up to September, 1923, Japan managed to adjust this post-war unfavourable trade balance without raising foreign loans or borrowing money abroad, as she was still in possession of ample gold and credit secured during the War. Nevertheless, the great earthquake and subsequent fire of 1923 disorganized the Japanese export trade: currency was inflated and prices suddenly rose. Imports have been so tremendously encouraged by vast purchases of material for reconstruction of the devastated area, that Japan had to borrow foreign money again to a vast amount. The outstanding volume of capital borrowed at the end of 1923 amounted to yen 1,453,700,000, in spite of the fact that redemption of about yen 906,000,000 was made during the War, while the capital borrowed abroad at the end of 1914 stood at yen 1,430,000,000. This shows that Japan borrowed more money in 1923 than before the War in spite of her payments made during the War. Furthermore, in 1924 the balance of loans and payments made abroad was roughly yen 350,000,000 against Japan. The specie holdings of Japan abroad have sunk to less than yen 300,000,000 from yen 1,000,000,000 since the end of 1920. Since 1922 a deficit appeared in the estimates which could no longer be covered by the surplus of previous years, and recourse to internal

foreign exchange short-term loans was necessitated. Foreign exchange on New York in January, 1923, was \$48½ and in December, 1924, was \$38¼.

Thus, Japan has more or less been in a state of adverse trade since she opened her door to foreign countries, with the exception of the two short periods named. The total excess of imports for the last fifty-seven years (1868-1924) amounted to yen 1,794,636,000. Judging from the above description it may be deduced that, according to Professor Boggs' classification of countries on the basis of their capital investments and trade balance, Japan is still among the immature borrowers.

Professor T. H. Boggs' *The International Trade Balance in Theory and Practice*, pp. 7-9.

(3) Countries which are in the habit of borrowing capital from abroad, and whose volume of capital thus borrowed is not so large that the resultant annual interest charges thereon shall equal the new and additional capital that they may import each year. These countries, the immature borrowers, have trade balances marked normally by an excess of imports. Canada, prior to 1914, was in the stage of borrowing; the United States, likewise, prior to 1874, was an immature borrower.

However, the case of Japan differs somewhat from that of Canada and the United States in respect of utility of capital. Both Canada and the United States have spacious fertile land, abundance of natural resources and a scanty population. Had the excess of imports of Japanese trade, or, in other words, import of foreign capital, been fully utilized for improvement of the producing capacity of the country, Japan could have developed her exports to a far greater extent. Her ever-increasing population has caused increased importation of food, and the scarcity of natural resources in Japan is not only a great disadvantage for her industrial development, but also necessitates her importing foreign raw materials, such as cotton, wool, iron, steel and coal, which are, by the way, the great items of American export trade at the present time. Japan, being mountainous, requires more capital to construct railways, road and other transport than does, for instance, the prairie land

of Canada. As a consequence, productive capacity of capital in Japan cannot be the same as in Canada or the United States. It is obvious that Japan will be in an immature state longer than other countries.

Added to this the tendency to an adverse trade balance is encouraged not only by tariff alterations and frequent changes of Government, but also by (1) vast imports of foods, owing to the rapid increase of population, the decline of agriculture and the extravagance of the people, and (2) waste of the capital accumulated during the War, and also (3) the colossal destruction of material wealth in the disastrous earthquake of 1923. There is no question about the seriousness of the condition of Japan's export industries, even after allowance is made for the recent general decline in the world purchasing power.

It is often said that the present stagnation of import trade of Japan is directly caused by the earthquake. This conception is far from being true. It cannot, of course, be denied that the earthquake is one of the chief factors in the recent decline of Japanese industries. Nevertheless, it was the earthquake which revealed the unhealthy state into which Japan had been drifting, and should be regarded as merely deepening the stagnation which had already commenced. Had there been no internal causes such as (1) and (2), the economic state of Japan would have been in a much better position than it is now, in spite of the results of the earthquake. At present, Japan resembles a person who has met with a serious accident. Had he been quite healthy and strong, such an accidental injury would not have caused a critical condition and he could be cured in due course. So what has to be done to recover Japan's economic health is to eliminate, in the first place, the internal causes instead of paying all attention to the external accident.

CHAPTER II

HANDICAPS OF JAPANESE INDUSTRIES

THE question arises as to whether Japan will in due course of her economic recovery have the internal causes remedied. The elimination of these defects is unquestionably indispensable; but the present stagnation of exports is due further to certain fundamental handicaps of Japanese industries, as follows:

1. *Internal handicaps.*

- (a) Scarcity of raw material.
- (b) High price of fuel.
- (c) High cost of commodities and increased wages.
- (d) Low efficiency of production.
- (e) High rate of interest.

2. *External handicaps.*

- (a) Renewal of American and European competition.
- (b) Rise of competition from Chinese and Indian cheap goods.

Regarding the first of these internal handicaps, Japan is extremely poor in natural resources, with the exception of silk, tea and a few other special materials. If we call the present century the age of machinery, iron and steel are decidedly the most essential commodities. One of the reasons why "the industrial revolution occurred in Britain first was because her iron and coal fields provided her with valuable raw material and motive power for machinery and for iron smelting."¹

¹ Prof. Knowles' *The Industrial and Commercial Revolution in Great Britain during the Nineteenth Century*, p. 15.

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Japan, however, has but small resources of iron ore, and she has to import it from foreign countries. Take, again, America and Germany in pre-war times; their unparalleled progress in mechanical industry was largely dependent upon their increasing production¹ of iron and steel. In this respect Japan is at a standstill compared with other countries.

It is a fact that Japanese cotton and other textile industries are at present well developed, and regarded as one

¹ WORLD'S IRON AND STEEL OUTPUT

Countries.	Pig Iron (Thousand English Ton).			
	1924.	1923.	1922.	1913.
United States	31,000	40,026	26,851	30,653
Canada	700	909	404	1,015
Great Britain	7,350	7,440	4,902	10,260
France	7,500	5,346	5,147	5,126
Belgium	2,800	2,154	1,573	2,428
Luxembourg	2,125	1,384	1,650	—
Germany	8,200	4,400	8,000	19,000
Czecho-Slovakia	700	750	339	—
Poland	500	492	458	—
India	550	536	350	—
Japan	550	500	450	83
World total (including all other countries)	64,630	66,471	51,928	71,182

STEEL INGOTS AND CASTINGS
(Thousand English Ton)

Countries.	Steel Ingots and Castings (Thousand English Ton).			
	1924.	1923.	1922.	1913.
United States	37,800	44,944	33,603	31,301
Canada	725	885	455	1,043
Great Britain	8,250	8,484	5,881	7,664
France	6,850	5,029	4,404	4,614
Belgium	2,850	2,250	1,539	2,428
Luxembourg	1,850	1,182	1,368	—
Germany	8,500	5,900	9,500	18,361
Italy	1,100	1,100	600	918
Austria	550	491	473	2,584
Czecho-Slovakia	800	1,000	630	—
Poland	950	935	930	—
Russia	600	492	212	4,760
Japan	550	500	500	39
World total (including all other countries)	73,575	75,096	63,098	75,019

NOTE.—Luxembourg figures for 1913 are included in Germany, figures for Austria include the major portion of Czecho-Slovakia and Hungary. Poland's production is covered by figures for Germany and Russia. Since 1922 Poland includes Upper Silesia.

(The above tables were taken from *The Times*.)

of the staple manufactures. However, the raw material¹ must be imported, as Japan cannot grow enough to supply her home industry, in spite of the repeated attempts of both Government and private firms. The supply of these raw materials is of vital importance in modern industrial development, and a shortage of them is a great disadvantage to a country engaged in international trade.

With regard to the second point, Japan is not by any means in a favourable position. Though coal² is produced in Japan, it is far from being plentiful, and its quality is inferior. Again, it is feared that Japanese coal may be exhausted in the near future. In regard to the output of mineral oil,² which has increased greatly in importance in all branches of industry and in transport (more especially in shipping), Japan has also poor supplies. Consequently the

¹ JAPAN'S IMPORTS OF RAW COTTON AND WOOL

Years.	Cotton.		Wool (Other than Top).	
	Quantity (Picul).	Value (Yen 1,000).	Quantity (Picul).	Value (Yen 1,000).
1914	6,200,791	218,474	9,476,737	5,189
1915	7,292,041	217,316	39,400,761	24,399
1916	8,363,339	276,088	30,652,567	25,158
1917	7,047,602	330,976	35,303,094	39,785
1918	6,825,654	515,558	36,284,837	49,141
1919	7,919,398	667,866	38,532,600	47,567
1920	7,838,967	721,437	53,351,200	106,503
1921	8,757,816	438,172	22,595,700	19,547
1922	8,710,569	427,840	50,593,300	39,621
1923	8,846,201	513,073	43,331,400	56,193
1924	7,622,758	552,354	—	—

² IMPORT AND OUTPUT OF COAL AND CRUDE OIL IN JAPAN

Years.	Coal.		Crude Oil.	
	Import (1,000 Tons).	Output (1,000 Tons).	Import (1,000 Grammes).	Output (1,000 Barrels).
1913	572	21,316	3,519	1,821
1914	950	20,293	2,495	2,481
1915	609	20,491	4,765	2,761
1916	551	22,902	2,739	2,787
1917	707	26,261	3,242	2,697
1918	761	28,029	1,271	2,303
1919	699	31,271	2,511	2,114
1920	797	29,254	4,657	2,161
1921	777	26,200	11,234	2,101
1922	1,167	27,701	23,665	2,042
1923	1,685	28,949	47,180	1,708

NOTE.—The world's output of coal in 1922 and of crude oil in 1923 was 1,208,000,000 tons and 1,018,900,000 barrels respectively, therefore Japan's outputs represent only 2.3 per cent and 0.16 per cent of those of the world.

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greater part of the oil used has to be imported, and the high cost of fuel results in high cost of production, which places all industries at a great disadvantage, especially those competing in international markets.

One of the most noteworthy developments during and after the Great War is the enormous rise in prices. According to the investigation¹ of the Bank of Japan, the index number of prices was 126 in 1914 as compared with 100 in 1900. As soon as the War broke out a sudden rise took place, and the number reached 343 in 1920. Although a downward tendency occurred after that year prices are still high.

Although the rise in prices has been world-wide, the rise² in Japan is higher than in the United States of America, Great Britain, the British Dominions, India and China, which are the countries of great importance as competitors of Japan. This undoubtedly means that the difference between Japan and other countries in this respect is to Japan's disadvantage compared with her pre-war position, as the high prices tend to bring about higher wages and cost of living. The cost of production is consequently higher than before. It must be taken into account that higher wages do not necessarily result in a higher cost of production, because an increase of wages means not only more highly

¹ INDEX NUMBER OF PRICES

Years.	Index Number.
1900	100
1914	126
1919	312
1920	343
1921	265
1922	259
1923	263
1924	273

(From the Report of the Bank of Japan.)

² INDEX NUMBER OF WHOLESALE PRICES (From the *Economist*)

Years.	U.K.	Australia.	India.	Canada.	S. Africa.	China.	U.S.A.	Japan.
1913	100	100	100	100	100	100	100	100
1918	224.9	177.8	180	207.8	153.1	—	194	195.8
1920	283.2	227.9	204	241.3	233.3	152.0	226	259.4
1921	181.0	174.9	181	170.4	160.4	150.2	147	200.4
1922	159.5	161.6	180	150.4	128.4	145.6	149	195.0
1923	162.1	178.7	176	153.9	126.6	156.4	154	199.1

skilled labour, special knowledge and experience, but an increase in quality and quantity of production. Japan is in a peculiar position in regard to this respect. Wages for Japanese labour have seemingly risen out of proportion to the increase in efficiency. One special point which stands out is the question of the price of rice, which is the most important and essential everyday food for the Japanese. This rice cannot be replaced by any other cereal, even rice produced by other countries. The people must have Japanese rice, owing to its special taste; therefore, its price is governed by its cost of production and quantity of the home output, and not by the international conditions of supply and demand. The price of rice has gradually been getting higher for the last ten years, and it is out of proportion as compared with prices of other foods; the reason for the rise is the enhanced demand through the increased population. The problem of rice production in Japan is of the utmost importance to the people. It is the chief factor in the present problem of food supply. Furthermore, as regards other foodstuffs, such as eggs, beans, potatoes, vegetables, flour and meat, heavy duties are still imposed on them for the purpose of protecting home agriculture. However, the value and volume of these imported foodstuffs, according to trade reports, have rapidly increased in spite of high duties. Consumers, therefore, have to pay higher prices for their everyday foods when they might procure them cheaper. Thus, high prices of rice and other foods in Japan are due to peculiar conditions, and this will be so as long as the present Japanese agricultural policy stands as it does.

The high prices of food in Japan, together with other reasons mentioned elsewhere, naturally increase the cost of living, which must eventually be followed by higher wages. Thus, cheap labour, which was characteristic of the Japanese workers and at the same time a great asset to enterprises, has now disappeared to a great extent. The rise of wages can be seen in the table on page 307.

One must also deal with the low efficiency of the work turned out as a cause of the inferiority of Japanese

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industries. This is well known to be a common defect in all industries. It may be accounted for mostly by natural defects, such as physical inferiority, which apparently brings great disadvantages, especially in the manual work of shipbuilding and transport, and poor natural resources, which require more labour and time in order to get the same output. For instance, Japanese coal mines do not produce

AVERAGE DAILY WAGES AND THEIR INDEX NUMBER IN JAPAN

	1922.		1923.	
	Wages (Yen).	I. Number.	Wages (Yen).	I. Number.
Female operatives in silk filature	1·06	321	0·35	100
Female cotton spinners	1·24	413	0·30	100
Founder	2·13	291	0·73	100
Blacksmith	2·09	286	0·73	100
Potter's wheel	2·07	304	0·68	100
Brick maker	1·83	240	0·76	100
Japanese paper maker	1·41	293	0·48	100
Lacquerer	1·98	275	0·72	100
Oil presser	1·85	308	0·60	100
Brewerymen (sake)	1·89	429	0·62	100
Confectionery	1·70	386	0·44	100
Typesetter	2·15	372	0·58	100
Carpenter	2·86	325	0·88	100
Plasterer	3·04	325	0·93	100
Stonecutter	3·37	333	1·01	100
Roofing tile layer	3·43	326	1·05	100
Bricklayer	3·30	302	1·09	100
Mat stitching men	2·41	301	0·80	100
Joiner	2·46	292	0·84	100
Wooden clogs men	2·01	335	0·60	100
Shoemaker	2·20	309	0·71	100
Working tailor	2·48	281	0·88	100
Daily labourer, male	2·13	361	0·59	100
Daily labourer, female	1·14	—	—	—
Fishermen	1·52	259	0·59	100
Male servant (monthly)	19·44	414	4·69	100
Maid servant (monthly)	16·46	583	2·99	100

the same output as compared with America and England in the same time and with the same amount of labour, owing to the thinness of the seams, also to the inefficiency of the miners. A secondary cause is such facts as : (a) technical inexperience, (b) want of sufficient machinery and (c) imperfection of management and industrial organization. These facts are described in the foregoing chapters.

Finally, it is also disadvantageous for industrial and commercial enterprisers to have to pay a high rate of

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interest on capital. During the past forty years the rate of interest of the Central Bank has been, generally speaking, about 6 per cent, which was raised considerably higher during and after the War, as shown in the following table. The City Bank rate has been much higher.

AVERAGE RATE OF INTEREST SINCE THE ISSUE OF CONVERTIBLE NOTES (1885)

	1885-1893.		1894-1903.		1904-1913.		1914-1923.	
	H.	L.	H.	L.	H.	L.	H.	L.
Government loans	5.10	4.71	5.58	4.74	5.85	5.00	5.93	5.19
Interest of City Banks	10.50	7.20	11.60	7.66	8.76	5.76	10.43	5.73
Deposits	—	—	7.38	4.91	6.09	4.34	6.47	4.27
Interest of Bank of Japan	8.39	4.74	8.76	5.84	7.30	4.74	8.03	5.11

H=Highest. L=Lowest.

(From *Sixty Years of Japanese Finance*, by the *Oriental Economist*, p. 615.)

It is fairly obvious that since a high interest rate is one of the factors in the high cost of production, Japanese industrialists have to make more profit in order to pay the high rate of interest. As a consequence, prices cannot help being higher than those of goods manufactured by America and England, where the rate of interest is much lower.¹

With regard to external handicaps it is plainly seen that the industry and trade of Japan, which were over-inflated during the Great War on account of the absence of competition in foreign as well as in home markets, have since suffered severely from European and American competition. What is greatly exercising Japanese industrialists is the rapid growth of new competition from China and India. The menace of these rivals has become greater during the last

¹ BANK RATES (from the *Economist*) (End of December)

	1920. Per Cent.	1921. Per Cent.	1922. Per Cent.	1923. Per Cent.	1924. Per Cent.
London	7	5	3	4	4
Paris	6	5½	5	5	6
New York	7	4½	4	4½	3½
Amsterdam	4½	4½	4	4½	5
Brussels	5½	5	4½	5½	5½
Rome	6	6	5½	5½	5½
Madrid	6	6	5	5	5
Tokio	8	8	8	8	8
Calcutta	7	7	7	7	6

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few years. From the beginning the development of modern Japanese industries was entirely due to imitation and transplantation of Western economic methods. Industries which need elaborate technical knowledge and skill are not yet satisfactorily developed. Those which Japan has successfully developed up to now are, generally speaking, those which can be easily operated by any country where labour is plentiful and cheap, such as cotton spinning (low-grade yarns) industry. After the War, as repeatedly mentioned, Japanese industries have been placed at a great disadvantage, owing to the rapid rise of cost of living, which tends to increase the cost of production. It is, therefore, unquestionable that the Japanese sweated industries have been menaced by Chinese and Indian goods, whose manufacture costs far less than Japanese, owing to the abundance of cheap labour. It can be said that Japan is at present facing keen competition from America and Europe on one hand and from China and other countries on the other.

CHAPTER III

RELATIVE DECLINE OF AGRICULTURE AND DUTIES ON FOOD

THE above-mentioned facts are almost inextricably interwoven as reasons of the recent decline of trade and stagnation of industries. The chief fact, however, is the rapid rise of the cost of living (high prices of goods and high wages). It is needless to add that many causes combine to make the cost of living high ; but the high price of food is firstly responsible. It is, therefore, necessary to investigate why the price of food in Japan has become so high, and I suggest the following factors as the cause :

1. Decline of agriculture.
2. Increase of population.
3. Development of industries.
4. High tariff on imported foodstuffs.

In Part III I have described roughly the relative decrease of agricultural population in Japan for the past fourteen years. In spite of the fact that various measures of relief for the agricultural community, such as relief from local taxes and assistance to agricultural co-operative enterprises, have been undertaken by the Government for the last decade, the recent state of arable land does not indicate any improvement. The output shows no proportional increase. Take, for instance, the output of rice,¹ the most essential

¹ OUTPUT AND CONSUMPTION OF RICE

Years.	Output (Koku).	Consumption (Koku).
1916	58,452,500	—
1917	54,566,200	—
1918	54,702,100	—
1919	60,818,200	—
1920	63,209,700	62,316,200
1921	55,180,500	65,027,800
1922	60,693,800	62,856,900
1923	55,466,100	66,723,000

(From the Report of the Department of Agriculture and Commerce.)

every-day food ; it has been practically stationary during the last few years. Other products have also failed to increase.

Generally speaking, agriculture in a country can flourish in proportion to the industrial development of urban districts, as its products are in greater demand and their prices naturally become higher. Nevertheless, there is a limit to agricultural prosperity, because it is only too plain that cheap foreign foodstuffs will sooner or later be brought into the home markets to compete with home-grown foods. This should be a landmark of agricultural prosperity. This should be the time for farmers to urge the Government to establish a high tariff on foreign goods or to grant a subsidy to them for the protection of home agriculture. Japan reached this stage in 1904, when the first tariff on imported foods was imposed. Since then the tariff has been repeatedly increased, although some items have been slightly lowered during late years. This protective policy has thus been firmly maintained for reasons which go to show that the protection of agriculture is indispensable in the interest of national defence and welfare. But the present state of farmers in Japan is distressing despite the high prices of their products. They can only manage to earn their livelihood by engaging in subsidiary occupations, the principal of which is sericulture. If the price of raw silk falls, they will instantly be in ruinous difficulties. This is clearly endorsed by the frequency of "tenant troubles."

With the decline of agriculture, Japan is faced with the problem of providing for about three-quarters of a million more population every year. The powers of absorption of the country itself are very limited. The insufficiency of home-grown food has been a great drawback in the supplies for the increasing population. More especially has it been felt since the increase of the urban population due to the recent development of industries. Consequently, the prices of food have risen so high that foreign foods are profitably imported into Japan even in the face of high duties. In fact, the rapid increase in foodstuffs imported during the recent last few years is the most significant thing clearly observed in Part IV.

As a country is like Japan industrialized, so the prices of foods will be raised, owing to the greater demand and a high tariff. The tariff will be increased until the high prices form a serious disadvantage for industries, which need the lowest possible cost of production for international competition.

In past years the Government has maintained and pursued the principle that "agriculture comes first, commerce and industries second." Nevertheless, the economic condition has ultimately changed to such an extent that farmers are no longer first in national importance. Without industrial progress and the development of foreign trade, the future of Japan cannot be prosperous. There is no other way except by encouraging industry and trade in order not only to purchase food and raw material from abroad, but also to provide the greatest possible employment for the people. Cheaper food is therefore essential if the cost of production is to fall. If an increase of population is desirable, and if the development of industries must be encouraged, the only way to do it is to reduce or abolish the tariff on imported foodstuffs.

PART VII

CONCLUSION

JAPAN has achieved remarkable development in the industrial and commercial spheres during the past half century on the basis of Western economic methods. The wealth of the nation has multiplied and the population has doubled. Industries have developed under the factory system and foreign trade has enormously increased in value and in volume. Japan is regarded as a formidable competitor in the international market, although she is undoubtedly over-estimated in this respect. In fact, comparing the present state of Japan with that of 1868, we cannot help being astonished at the great change which has been brought about in every line of national economy.

During Japan's long spell of isolation, there had been a great industrial and commercial revolution in Western countries. England had been founding colonies over a vast area and developing her trade practically all over the world. To the Japanese eye at the time, Western civilization seemed to be creating nothing but great consternation. It was only natural that, on the introduction of foreign new ideas, great confusion reigned in the social, political and economic life of Japan. Civil war was ready to break out; the question of unemployment was serious; prices rose greatly, and this unsettled political and financial state continued for fifteen years following the Meiji Restoration (1868).

As a nation, Japan was economically poor. In 1868 her gross foreign trade was scarcely more than yen 27,000,000 (about £2,700,000), as compared with the yen 2,000,000,000 (about £200,000,000) of imports and yen 1,500,000,000

(about £150,000,000) of exports in 1924. Her exports consisted mostly at that time of native hand work, such as bamboo goods, tea, lacquered wares, mats and raw silk, which were all made in the homes of the workers. There were, of course, neither iron steamships, railways nor modern industries, such as cotton, wool, engineering and chemicals. Foreign imported goods appeared to the Japanese to be marvellous objects, and gave the impression that Western goods were far superior to Japanese ones, and this impression, as a matter of fact, still remains in the mind of the people.

The twenty-five years following the Restoration were the most strenuous which Japan has yet encountered in her modern history. Western economic methods were eagerly introduced and new fundamental laws regarding national economy, such as the Commercial Code, the Banking Act and the Exchange Act, were promulgated one after another. The Government established factories, docks and railways, with the assistance of foreign experts, for purposes of national necessity and to educate the people in the new scientific and engineering knowledge. The new Western transport and manufactures created fresh demands, and other areas were opened up and new markets developed. Japan's population, which was less than 30,000,000 before the Restoration, increased to 40,000,000 in 1889.

An Imperial Rescript was issued on the 11th October, 1881, and the people were assured of the establishment of a National Assembly in the year 1890. Thus, constitutional government was founded in the place of feudal administration; the people were given a parliamentary vote, although it was limited to taxpayers and the property-owning class.

The most striking fact is that Japan so successfully developed her national strength that twenty-seven years after the Restoration she was able to claim victory in the Japanese-Chinese War. The development of fundamental enterprises, especially banking and transport, was marked after the war. Railways and steamships subsidized by the Government were successfully constructed by Japanese engineers. Machinery, engineering and other

important industries which had been mainly undertaken by the Government before the war passed to private firms under the protection of a high tariff. The gold standard stabilized financial conditions, and the revision of the one-sided Treaties, by which Japan secured tariff autonomy and the abolition of extra-territoriality, afforded her great facilities for economic progress. Generally speaking, during the period 1868-1904 home industry developed faster than foreign trade.

It must not be overlooked that the wars which Japan has had to wage during the last thirty years have been landmarks in regard to economic progress. The war with Russia (1904-1905) contributed to the development of Japanese industries and trade even more than the war with China. As the triumphant result of the war, Japan's international status rose to the rank of a "first-class" Power, her territory doubled in area, and 20,000,000 were added to her population. Korea became a Japanese Protectorate and its annexation followed a few years later, while Manchuria was openly recognized as an area of Japanese influence. Japan became the only colonizing country in the Far East. In order to promote colonial industries, such as sugar in Formosa and coal mining and railways in Manchuria, and also to encourage the further development of home industries and trade, a great amount of capital was continuously imported from abroad. With the aid of protection and abundant cheap labour, Japan's industries, especially cotton spinning, shipbuilding, engineering, electric power supply, made striking progress. Cotton yarn made in Japan began to be exported not only to China, but to India and other Eastern countries, consequently causing keen competition with British cotton goods. Although shipbuilding was heavily subsidized by the Government, its progress seemed to belong to another age, as compared with the previous ten years in respect of construction and completeness. Japanese ocean transport so rapidly developed that her foreign trade was mostly carried by her own vessels instead of the foreign ships which had been the main means of transport before the Japanese-Russian War. On account

of Japan's mountainous conformation and plentiful rainfall, electric power supply works were established all over the empire, a step which was regarded as most necessary to compensate for Japan's lack of fuel. Although engineering works were established on a large scale after the Japanese-Russian War, their activity became marked after the Great War. The most significant feature, however, after 1905, was the noteworthy development of manufacturing industries, in spite of the fact that Japan has an insufficient supply of raw material for her staple industries. As a consequence, her people started to crowd into the cities, and Tokyo, Osaka, Kobe, Nagoya and Yokohama have grown rapidly into important industrial and commercial centres. Foreign trade multiplied in value and in volume, and its character greatly changed. Imports of manufactured goods, with the exception of iron and steel and machinery, gradually decreased and foodstuffs and raw material increased. Exports of cotton and silk manufactures and other finished goods increased both in value and volume, and took the place of foodstuffs and unfinished goods. Another noticeable feature of this period was the relative decline of agriculture. Home-grown foodstuffs were not sufficient for the growing population. After the war foreign foodstuffs began to be imported into Japan, and the Government imposed a high tariff for the purpose of protecting home agriculture. Thus, Japan was showing signs of changing from an agricultural to a manufacturing country before the Great War. This tendency was strengthened after 1914, and a further development of industries and trade was achieved, owing to the absence of foreign competitors and the vast demand for Japanese goods. During the five years of the War cotton mills, woollen and other textile factories, iron works and docks were successively established; Japan's ocean-going merchant fleet increased in number as well as tonnage, the latter 3,655,000 in 1924, a 2,000,000 ton increase as compared with 1914, and Japan is now the third maritime country, coming next to England and the United States. Japanese industries founded under the modern factory system have successfully practised mass

production. Foreign trade witnessed a vast excess of exports, the national revenue multiplied itself and individual wealth suddenly increased. The people became undesirably extravagant ; an unparalleled rise of prices, wages and cost of living took place ; labour troubles which Japan had never experienced have been acute year after year since the War ; agrarian trouble is serious, owing to the unremunerative state of agriculture.

When the War was followed by the world economic depression, the industries and trade of Japan were suddenly brought to a chaotic state. Japan's financial and economic condition was so critical during 1920-1922, that many new firms and several old ones went into liquidation. The advantages enjoyed by Japan during the War suddenly disappeared ; but the high cost of labour, prices and living remained, and labour disputes are as rife as ever. At the same time foreign competition has returned, and Chinese and Indian industrial development has meant additional competition to Japanese manufacturers. Consequently, the export trade has gradually decreased, while imports have an increasing tendency owing to purchase of foreign foods, raw material and also to the people's extravagance, which stimulates an incessant flow of foreign luxuries. Thus, the adverse balance of trade recurred in 1919 and has continued ever since ; this tendency was greatly intensified by the disastrous earthquake of 1923.

Although at present industry and trade seem to be at a standstill, their condition shows significant economic progress in comparison with the early part of the Meiji era. The causes of the progress, as already described, can be summarized as follows :

1. The Government's strenuous and successful efforts to reorganize the economic system by the purposeful introduction of Western methods.
2. Two victorious wars.
3. An excessive protection policy.
4. The opportunities which the Great War offered Japan for the expansion of her industries and trade.

What has contributed to progress all through the last half century is, above all, the fact that Japan has possessed abundant cheap labour. Low wages and long working hours cover to a certain extent the high cost of raw material and other high charges on production. Nevertheless, the recent rapid rise of wages tends not only to diminish Japan's chief advantage in regard to production, but also to bring her original disadvantages to the surface. What is meant by her original disadvantages is lack of raw material. It is clear that the present state of capitalist enterprise has been scientifically devised by Western countries on the basis of natural resources, such as iron, steel, coal, oil, cotton, wool, etc. It is absolutely impossible that Great Britain could hold her premier position in the industrial world without resources of iron and coal in her isles. The reason why America and Germany have achieved progress so pronounced that it seems to threaten British industrial supremacy is the fact that they have a sufficient supply of staple materials in their own territory. Needless to say, a country which has ample resources of raw material enjoys great advantages in international industrial competition. It can be said, without hesitation, that the international conflicts which occurred during the past century were largely due to the ambition to acquire territories producing important raw materials. The predominant feature of national policy from 1850 to 1914 was imperialism, and the period is well described as "the age of colonial expansion."

It is perfectly clear that a country poorly endowed with those important resources will never be able to attain equal success in international competition with more favoured countries, except in industries which can be undertaken without skill and experience, should cheap labour be easily obtainable, as it covers to a certain extent the cost of imported raw material. Take, for instance, the cotton industry in low-grade yarns. Japan's spinning industry has developed prominently because Japan has had abundant cheap labour, although she had altogether to rely upon foreign cotton. But owing firstly to the rapid rise of wages

and, secondly, to Indian and Chinese competition, the low-grade cotton industry in Japan has been placed in a very difficult position. Not only cotton, but also nearly all of the Japanese industries seem to have come to a standstill ; even the silk industry seems in danger of being gradually surpassed by that of China. In fact, many of the advantages which Japan possessed have disappeared and many disadvantages remain, while new ones are continually appearing.

Despite the decrease of exports after the War, Japan has to import foreign foodstuffs yearly to the amount of yen 250,000,000 and raw material worth yen 900,000,000. Both classes show an increasing tendency in recent years. The result has been revealed by the post-war adverse trade balance, which does not seem likely to change in the near future. The excess of imports reached yen 2,261,813,000 between 1919 and 1924, this surpassing the excess of exports during the War by about yen 853,000,000.

National economy differs by no means from private business. If a country fails to pay its debts to other countries, it is in the same position as a private firm which goes into liquidation. It is clear that should a country have no prospect of increasing the national productive capacity, and should it continue to import foreign goods beyond its exporting capacity, it will have an adverse balance which it must pay either by borrowing money abroad or sending out its own savings which could be otherwise used productively at home. As long as this condition lasts, such a country has no assurance that it can maintain its standard of living. For instance, take the case of a country of 50,000,000 people and represent their standard of living by the figure of 100. If the population increases to 60,000,000 and there is no corresponding increase of productive capacity, it is clear that the country can only maintain its financial independence by forcing people to lower their standard of living from 100 to 80.

The population of Japan increased from 50,000,000 in 1909 to 60,000,000 in 1922, by a yearly increase of three-quarters of a million. Emigration furnishes no outlet, owing

to immigration restrictions which the Western countries firmly maintain even in their scantily populated colonies. Provided that no outlets are found for Japan's growing population and that no reduction of the present standard of living is possible or advisable, the only way open to her to cope with the present national difficulty is to encourage industries and trade to the utmost of her power. Although the industries of Japan have been developed considerably under the modern factory system, the export of their manufactures has not reached the importance of that of raw silk, which continues to be the one substantial item of Japanese exports. Many industrial factors have been left unimproved. A better financial system, reorganized industrial methods, up-to-date machinery, and the education of skilled workers are reforms which are urgently needed. The silk industry has to be developed until it sends out finished goods in place of raw silk. The cotton industry should be encouraged to export high-grade goods. As industries are improved, more employment can be afforded and the balance of trade can be corrected.

It is, of course, impossible to prevent a further rise of wages in the course of industrialism ; but there are many ways to promote industries by efforts to eliminate other drawbacks. The fundamental commercial and industrial policy which Japan has pursued during the last half century has been one of excessive protection. It might be said to be a necessary step as long as industries are in a state of infancy ; but heavy duties are still imposed on foods and raw material, in spite of the fact that Japan no longer grows sufficient foods, and has no home supplies of important raw material. If it can be said that cheaper food and raw material are necessary to the no longer infant industries of Japan, the present protective policy is by no means beneficial.

Since the present import tariff was framed in 1911 over fourteen years have elapsed, during which the economic position of Japan has completely altered. In spite of this, the Government has adopted a negative policy with regard to the adjustment of the adverse balance of trade. The

Diet passed the "luxury tariff" in March, 1924, by which 100 per cent duty *ad val.* was imposed on certain foreign goods for the purpose of checking imports and encouraging exports. The tariff, however, although it appears to be keeping out foreign goods, has caused the domestic prices of similar goods to rise. The rise in the price of "luxuries" has created a sympathetic movement in the price of necessities, so that a lower wage scale in Japanese industries seems more improbable day by day. The depreciated exchange does not seem to have caused any vast improvement in exports, and it has tended to enhance prices. A wholesale revision of the statutory tariff has been discussed by the Tariff Commission which was recently appointed. It is said that the Commission have already agreed that an exclusive protective policy as embodied in the Fordney Tariff in America is necessary for Japan. Should a heavier duty be imposed on foods, raw materials and industrial plant, the industry and exportation of Japan are certain to suffer. It may be true that if the importation of foreign goods be restricted a certain section of the people will benefit by monopolizing the home market, but the nation will severely suffer in many directions, owing to consequent high prices and the further decline of Japanese exports.

It is clear that the right way for Japan to get through her present economic stagnation is to lower the cost of production and to foster exportation by providing the people with cheaper raw materials and food. At the same time the disadvantages which Japan is facing must be lessened by an adequate policy. The measures regarding tariff revision which the Japanese Government is said to be contemplating are unquestionably against her present and future needs, and unfavourable from the point of view of her national development.

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