

CHAPTER XIX

MACHINERY AND ENGINEERING

Machinery

Introduction

The manufacture of machinery in Japan started after the Restoration. The progress, however, was very slow, and it was only after the Russo-Japanese War of 1904-1905 that the public began to take any real interest in investment in this kind of industry. Progress was being made before the Great War, but with the outbreak of war the situation completely changed. Prior to the War, Japan had to import large quantities of machinery, but during the World War, imports were stopped, and a great stimulus was thereby given to the home manufacture of machinery. During the war years she became able to supply not only most of her own needs, but also some of those of foreign countries. Factories for manufacturing arms and various other kinds of machinery, as well as shipbuilding-yards, were established in many parts of the country, and these profited not only financially but in the experience they acquired in skilled mechanical work of various kinds. The great boom in shipbuilding stimulated the estab-

lishment of many new works for the turning out of engines and other equipment for steamers, while the difficulty of obtaining imported machines for spinning, weaving, paper-making, etc., caused a rapid establishment of new works for their manufacture. This cutting off of imports also served to encourage the manufacture of motors, electrical machinery, automobiles and aeroplanes. With the great post-war slump, naval disarmament, general depression the world over, embargo on gold, high tariffs, and all the other ills from which industry was suffering of late years, the machinery production industry was also heavily depressed. The outbreak of trouble in Manchuria, however, in September, 1931, and the military operations which followed, created a new demand for arms, while the reimposition of the gold embargo, and subsequent decline of the value of the yen served to revive the industry. The growth of the machinery manufacturing industry can be gathered from the following table:

GROWTH OF MACHINERY INDUSTRY

(Unit: ¥1,000)

Kind	1914	1919	1921	1926	1929
No. of mills	388	590	526	4,429	5,295
No. of operatives	80,862	195,227	162,724	273,269	190,154
Value of production	110,906	716,241	568,322	538,917	682,162
Kind	1930	1931	1932	1933	
No. of mills	5,604	6,479	6,738	7,850	
No. of operatives	205,808	—	230,896	249,323	
Value of production	615,682	443,340	543,842	888,195	

The production of machinery in the factories where more than five persons are employed (exclusive of Government factories) for 1933 totalled ¥888,195,312, and compared with the figure of 1932, it showed an increase of over ¥287,000,000. This was the largest figure for the last decade, the previous recorded figure being ¥888,019,698 for 1912. Classified according to the size of mills, production by mills employing from five to thirty operatives amounted to about ¥125,000,000 or 14.1 per cent., by those employing from 30 to 100 operatives about ¥123,000,000 or 13.9 per cent., by those employing from 100 to 200 operatives about ¥86,000,000 or 9.7 per cent., and by those employing more than 200 operatives about ¥553,000,000 or 62.3 per cent. In examining the number of mills classified according to the number of operatives employed, those which employed from five to 30 operatives were 6,735 or 85.8 per cent. of the total, those employing from 30 to 100 operatives 817 or 10.4 per cent., those employing from 100 to 200 operatives 151, or 1.9 per cent., and those employing more than 200 operatives 147 or 1.9 per cent. Thus, the amount of production per mill differs extensively according to the class of mills. In the instance of mills employing from five to thirty employees the average production per mill was ¥18,560, in those employing from 100 to 200 operatives ¥573,081 and those employing more than 200 operatives ¥3,762,696.

The classes and kinds of machinery are so many and varied that it will take too much space to give an account of all of them. We have, therefore, divided them into the following classes for convenience:

- Ordinary Machinery
- Electrical Machinery
- Locomotives and Rolling Stock

- Aircraft
- Automobiles
- Shipbuilding

and a brief account of some of representative ones in each class will be given in the following columns.

Ordinary Machinery

Manufacturing Machinery The manufacturing machinery has made a rapid progress owing to big demand. All makers are very busy to enlarge their mills. But on account of difficulty in delivery of domestic makes within the time required, advantages are being taken by imported machineries. The large makers have formed an association for export, which promises future development.

Casting and Casting Machinery Castings which are related with service supplies industry and machinery for exports are active, although those related with agricultural implements are still inactive.

The tendency to perform casting by machinery has suddenly become strong in recent years along with the activities of service supplies industries. This tendency is especially noticeable in automobile and aeroplane manufacturing plants. Though high-class castings are still imported from Germany and America, machines like sandblast, moulding machines, cupola, etc. are successfully made in Japan.

Air Machine Recently the demand for air machines has considerably increased and Japanese machine manufacturers quickly caught the opportunity so that most of air machines are now self-supplied. Especially pneumatic tools such as air-compressor, rock-drill, and pick-hammer, air motor and air hoist are manufactured in great numbers.

Machinery for Chemical Plants It is only in recent years that machinery

used in chemical industry drew attention of large machine manufacturing mills. The progress and development of chemical industry, however, has been so great that the manufacture of chemical machinery now forms an important part in machine manufacturing industry. In foreign countries makers of chemical machines are at the same time contractors for the plants and are responsible for their success or failure, but the manufacturers of Japan have not attained that stage yet.

Wood-Working Machine Activity of shipbuilding and rolling stock industries has stimulated the manufacture of wood-working machines and the Japanese machines have almost expelled imported ones and are exported to America, South Sea Islands, India and Siam in a considerable amount.

Cranes Cranes made by Japanese factories went in a large number to iron, steel, cement and chemical mills and mines, and they are going to check the import of foreign machines in the near future.

Spinning Machine It is needless to say that spinning industry in Japan achieved a wonderful progress in recent years. One of the causes of the success is due to the excellent spinning machines invented in Japan. Almost all machines in spinning mills are now manufactured in Japan and it is rather difficult to find foreign spinning machines used in most of new advanced mills in Japan.

Pumps At present pump manufacturing is altogether independent of foreign technique. Pumps for public works are constantly improved to meet new demands and the manufacture of pumps made of materials acid-proof or alkali-proof which are used in chemical and rayon industries has made a great progress.

Engines and Boilers Great activities shown in new constructions and

extension works of power houses and of various manufacturing companies would tell at once what would be the effect on engine manufacturing, the activities of which industry are unprecedented. Mills of Toyo Babcock Co., Ltd. and others have orders on hand to the fullest extent. This manufacturing is making new records in type, in capacity, steam pressure etc. Largest orders are coming from power houses, steamers and battleships for supplementary use, chemical industries, artificial silk mills, and other textile industries in the order named.

Agricultural Machinery and Agricultural Implements The demand for equipments for supplying water, for cleaning rice, etc. increased fifty per cent. in number as compared with that of two years ago. Owing to the high cost of raw materials, however, the profit of manufacturers is not so large.

Machinery for Mining Stimulated by the activities in the heavy industries, both coal and metal minings have been extremely active since 1932, and it is anticipated that there will be no depression in this industry for several years to come. Under the circumstances, manufacturers of mining machines are enjoying almost unprecedented boom. These machineries are classified into mining, selecting and smelting machines, of which the latter are more important and vary to a great extent in kinds, etc.

Machinery for Building and Public Works The Government's policy to undertake public works as relief measures for farmers has naturally opened a way for big demand on machinery for building and public works. The purchase of road rollers, locomotives, crushers, etc. has been considerable.

Printing Machines As to printing machinery high speed and high

grade machines are in vogue. To meet the requirement of high speed printing the use of rotary press has developed while the increase of demand on the gravure and offset machines shows that the higher grade machines are popular. Manufacturing of high speed and high grade printing machines has now so advanced that not only import of these has come to be negligibly small, but domestic makes are exported to Manchoukuo, South China, the South Sea Islands, and India to a great extent.

Gauges and Optical Machinery Of all gauges those that have the greatest future prospect are perhaps electric gauges, to which optical and mechanical gauges will follow in the order named. At present the study is being directed mainly on gauges for aeroplanes, and there is a very keen competition among makers for their successful manufacturing. Gauges, which require exactness, are optical ones, and the authorities concerned seem to be directing their attention for the production of high-class optical instruments. In the past the manufacture of gauges was carried out by various makers in their own ways, no unified control on production was possible, and seriously hampered its development. The Department of Commerce and Industry appears meditating to impress upon the mak-

ers with the advisability of instituting an organ whereby to control the production and sales of gauges.

Various Tools and Implements The demand for various tools and implements in recent years has been very strong. Due to the lower exchange rate of yen, the price of imported tools and implements became very high which served as a great stimula for development of domestic manufacture. Technique of manufacturing these tools and implements has made a great advance, and most of imported ones are replaced by domestic makes. Demand on imported ones is restricted to those of superior class. Many new mills have sprung up, and tool and implement industry appears enjoying its golden age.

In addition to the above there are numerous other machines, instruments and tools, which are enjoying boom with more or less degree due to general industrial activities. Some of the more important ones are:

Welding and cutting appliances, dyeing machinery, conveyors, gears and gear cutters, stokers, cleaners, ball bearings, steel balls, various musical instruments, scientific instruments, etc., etc.

Production Production of all machinery and tools which come under this class follows:

PRODUCTION OF ENGINES

Year	Steam engines		Steam turbines		Internal combustion engines				Oil engines	
	No. produced	Value yen	No. produced	Value yen	Gas engines No. produced	Value yen	Light oil engines No. produced	Value yen	No. produced	Value yen
1924	163			707,327		8,698				12,385,698
1925				280,905		10,406				13,981,662
1926	370			294,506		15,778				18,017,677
1927	234			1,251,468		15,307				13,982,015
1928	312			897,036		19,644				19,118,828
1929	931	2,615,111	15	754,858	128	104,545	965	9,660,598	23,828	9,900,571
1930	74	238,341	42	2,220,460	575	340,416	1,337	11,852,363	104,854	9,671,130
1931	97	80,769	17	1,458,889	10	8,800	778	5,008,217	15,295	5,228,870
1932	77	150,006	86	1,022,760	103	76,472	2,371	20,587,362	16,558	4,420,307
1933	162	580,519	51	7,269,146	142	116,780	5,546	32,360,597	17,229	4,049,815

MACHINERY AND ENGINEERING

Year	Internal combustion engines		Water wheels		Production of fittings	Grand total
	Heavy oil engines		Turbine water wheels	Pelton water wheels		
	No. produced	Value	No. produced	Value		
		yen		yen	yen	yen
1924		12,385,598	1,052	668,139	668,139	14,921,572
1925		18,981,662	992	999,390	999,390	16,184,748
1926		18,017,677	268	1,445,262	1,445,262	21,070,937
1927		13,982,015	625	2,008,930	2,008,930	24,396,508
1928		19,118,928	590	1,278,778	1,278,778	23,739,051
1929	1,579	7,557,746	261	2,031,407	23,253,067	33,935,624
1930	2,274	6,759,923	115	1,890,568	1,926,376	36,877,887
1931	2,002	8,248,660	111	765,540	847,063	42,215,098
1932	1,783	5,790,541	173	575,847	577,339	34,118,552
1933	3,961	11,618,068	91	183,076	501,265	2,867,389

PRODUCTION OF BOILERS

Year	Water-tube style		Cast iron		Others		Machinery	
	No. produced	Value	No. produced	Value	No. produced	Value	Fittings and accessories	Total for producing gas
		yen		yen		yen	yen	yen
1924		535		1,329,365			1,329,365	328,990
1925		883		1,647,994			1,647,994	471,894
1926		869		1,630,391			1,630,391	328,505
1927		762		1,221,052			1,221,052	160,841
1928		1,482		3,028,145			3,028,145	108,198
1929	179	2,375,285	295	42,032	1,529	1,968,055	1,264,520	5,649,982
1930	143	2,573,598	374	249,798	844	1,097,475	1,283,860	5,169,731
1931	86	2,388,832	89	50,330	1,180	1,197,505	2,724,523	6,369,190
1932	86	1,185,444	264	178,000	1,257	2,384,306	701,659	4,449,409
1933	120	2,071,541	281	217,976	2,020	5,617,207	3,647,849	11,554,573

PRODUCTION OF PUMPS, COMPRESSORS AND FANS

Year	Pumps		Hydraulic compressors		Gas compressors		Blowing machine (Fans)	
	No. produced	Value	No. produced	Value	No. produced	Value	No. produced	Value
		yen		yen		yen		yen
1924	129,993	7,146,051	—	—	—	3,130,779	80,100	
1925	95,464	6,810,845	—	—	—	3,241,005	91,948	
1926	97,692	77,689,72	—	—	—	2,327,097	69,001	
1927	94,100	7,863,534	—	—	—	1,407,917	35,508	
1928	114,450	9,812,981	—	—	—	1,551,576	2,602	
1929	170,258	8,608,986	756	439,835	1,244	1,535,262	12,004	838,693
1930	515,642	8,002,940	1,084	452,580	9,239	3,152,991	1,475	599,142
1931	398,632	6,537,801	686	358,938	2,230	1,627,198	13,266	748,891
1932	290,480	6,510,822	1,102	720,903	2,199	1,123,213	28,433	755,241
1933	290,477	9,669,019	833	810,502	1,969	1,721,220	4,152	1,143,718

PRODUCTION OF MACHINES AND TOOLS

PRODUCTION OF METAL MANUFACTURING MACHINES AND MACHINE TOOLS

Year	Metal manufacturing machines		Machine tools		Total
	No. produced	Value	Drills, cutters, etc.	Others	
		yen	yen	yen	yen
1924	—	8,907,707	—	—	—
1925	—	6,892,416	—	—	—
1926	—	7,045,657	—	—	—
1927	—	8,259,271	—	—	—
1928	—	7,671,887	—	—	—
1929	464,252	5,585,895	942,269	3,898,818	4,348,087
1930	32,737	4,436,549	1,167,163	3,179,858	4,347,021
1931	114,756	3,944,923	1,280,939	2,530,871	3,811,810
1932	33,654	8,198,267	879,924	3,081,695	3,961,619
1933	50,103	15,403,826	1,504,395	3,963,961	5,468,356

PRODUCTION OF OPTICAL INSTRUMENTS

Year	Lenses, including prisms	Microscopes	Telescopes	Field-glasses	Glasses
	yen	yen	yen	yen	yen
1928	—	—	—	—	—
1929	543,059	49,561	18,118	193,163	260,100
1930	402,739	94,172	16,470	2,955,885	317,550
1931	433,338	72,076	20,885	98,741	230,338
1932	572,961	54,750	182,302	227,325	360,114
1933	787,249	261,727	1,433,169	3,304,068	126,050

PRODUCTION OF MEASURING AND WEIGHING INSTRUMENTS

Year	Rules	Measures	Scales	Gas meters	Water meters	Accessories and fittings	Total
	yen	yen	yen	yen	yen	yen	yen
1924	762,926	735,863	3,529,318	1,644,569	1,008,297	263,896	7,949,869
1925	1,149,510	499,039	3,503,236	1,462,095	407,451	313,832	7,335,163
1926	806,309	363,948	4,782,282	397,736	612,435	198,755	7,161,465
1927	1,371,711	807,119	3,224,781	3,353,941	59,500	215,927	9,032,979
1928	1,150,781	714,147	3,210,425	1,791,125	844,280	372,705	8,083,963
1929	1,027,579	840,754	3,239,202	5,202,256	576,789	477,360	11,372,946
1930	794,776	298,269	3,083,458	2,998,262	1,379,397	411,724	8,915,886
1931	581,717	248,705	2,443,134	1,998,534	1,345,382	264,173	6,881,645
1932	705,516	175,568	2,228,220	1,870,250	1,485,165	466,348	6,931,071
1933	869,288	298,100	3,692,690	2,042,099	1,891,487	467,937	8,761,607

PRODUCTION OF VARIOUS METERS

Year	Thermometers	Clinical thermometers	Electric meters		Others	Total value
	No. produced	No. produced	No. produced	Value		
				yen	yen	yen
1924	—	—	—	986,085	4,655,165	5,641,250
1925	—	—	—	1,038,780	3,369,214	4,408,003
1926	—	—	—	1,484,508	4,720,281	6,204,789
1927	—	—	—	1,069,946	4,755,048	5,824,994
1928	—	—	—	923,156	7,933,606	8,856,764
1929	732,099	425,534	912,172	795,236	184,131	2,128,677
1930	745,307	881,415	1,046,500	841,766	209,287	2,772,177
1931	676,743	310,924	1,237,192	777,377	213,011	2,657,049
1932	511,786	273,356	1,388,889	883,335	395,298	3,997,290
1933	750,742	431,194	1,518,544	839,151	439,268	7,312,489

Electrical Machinery

Introduction The general economic prosperity increased the demand on electric power to a tremendous extent, which stimulated the construction of big thermal power houses, and extension and completion of power cables. An epoch-making improvement has also been effected in the construction of electric machinery which use high voltage, such as thermal electric dynamo, transformer, rotary converter, switch-board, frequency changer, induction voltage regulator, etc., many of which have an astonishing large capacity and produce a high revolution such as never have been imagined before. The same sort of development has been attained in electric machinery and instruments which use electricity of smaller power. The following are some of domestic electric machinery which deserve attention:

Description	Capacity
Water Wheel Dynamo	40,000 KVA
Thermal Dynamo	50,000 K.W.
Synchronous Advancer	30,000 KVA
Non-Synchronous Advancer	30,000 KVA
Frequency Changer	15,000 KVA
Rotary Converter	6,500 K.W.
Self-Cooling Transformer	22,000 KVA

Thermal Dynamo Domestic makes are now replacing the imported ones. To cite only a few examples of those recently manufactured: five units of 53,000 k.w. installed for Kwansai Kyodo Kwaryoku, one unit of 12,500 k.w. for Hokkaido Dento, one 30,000 k.w. unit for Yawata Seitetsusho, and one 35,000 k.w. unit for Toho Denryoku are notable ones.

Turbine (thermal) Owing to rapid increase in the number of thermal power houses, manufacturing of turbines is showing a great activity.

Mitsubishi and Ishikawajima received orders for a turbine of 53,000 k.w. from Kwansai Kyodo

Thermal El. Co., while the latter installed a 53,000 k.w. turbine for Tokyo Electric Light Co., Ltd. at their Tsurumi Plant. Hidachi Seisakusho accepted also an order from Yawata Iron Works of the Japan Iron Mfg. Co. for 30,000 k.w. turbine.

Hydraulic Dynamo Hydraulic dynamo manufacturing is controlled exclusively by domestic makers and is in its most prosperous stage, showing a great progress both in art and in volume of production as compared with its status of a few years ago. Three units of 40,000 KVA manufactured by Shibaura Seisakusho for Chosen Hydro-electric Co., one 52,000 k.w. unit manufactured by the same company for Yahagi Hydro-electric Co. one unit of 60,000 k.w. manufactured by Hidachi Seisakusho for Japan Electric Power Co., Ltd., are good examples. Since almost all the electric power companies are enthusiastic for building larger power houses, this manufacturing work promises a further development.

Direct Current Dynamo The demand for the direct current dynamo has increased rapidly for charging, experimenting, for steamers and wireless telegraphy. Dynamos of both large and small capacities are selling well. It deserves a special notice that small mills of various manufacturing concerns and cotton goods plants are installing dynamos of small capacity for lighting purpose.

Electric Motor The demand for electric motors has become very strong on account of activities in the industrial world, especially in spinning, munitions and cement industries. Kinds and types of motors manufactured vary to a great extent. One motor capable of producing 23,000 HP. which is considered as one of the largest in capacity in the world and a synchronous motor of 1,100 HP. have been manufactured by domestic makers. Special motors of high ef-

iciency which are required in cotton spinning mills, agricultural districts, etc. are successfully manufactured.

Water Wheel Manufacturers of water wheels have considerable difficulty due to the fact that different wheels must be made for high and low heads. For instance, Koguchigawa No. 3 power house of Nihonkai Hydro-electric Co., Ltd. has a head of 118 metres which is considered the highest head in Japan. On the other hand, the study on turbines, etc. for a power house built for the purpose of raising water is being made by companies like Chūō Electric Co., Ltd.

Transformer Great demand for electric power has naturally caused the increased manufacture of transformers, both large and small in size. Study has been made as to location and capacity of transformers and as the result transformers of various types and kinds are being manufactured. Some transformers with a capacity of 43,000 KVA or others with voltage regulators, etc. are manufactured successfully.

Converter or Phase Advancer Condenser converters of comparatively large capacity are being manufactured by large electric machinery makers. Recently, a rotary converter which generates 6,000 k.w. and 10,000 amperes, synchronous converters which produce 6,600 k.w. and mercury arc rectifier which generates 2,000 k.w. have been manufactured. Some of the smaller converters use oil filled cables, and there are many kinds and types of the latter.

Cable and Wire The firm of Sumitomo has done much research work on the GP submarine cable, but now the subject of research has been shifted to the lead-covering. Not only three large firms, viz. Sumitomo, Furukawa, and Fujikura, but also Nihon Densen and the Tokyo Cable Manufacturing Company are also

undertaking the work, and such high-class cables and wires are produced in great quantities that the import of these articles has now become an old story. Among the manufacturers are included not only those big firms mentioned above, but also over a hundred of those which rank with Dainippon Densen or Tsuda Densen.

Electric Furnace The demand for electric furnaces has recently become very strong along with the development of the metal industry. Electric furnaces having capacities of as large as 1,500 KVA and 2,000 KVA are produced.

High Speed Oil Circuit Breaker Along with the increase of voltage, the increase of speed of breaking circuit becomes a resultant requirement. Both physical and chemical researches have been made and the perfection of making a breaker which cuts the circuit at an exceedingly high speed is amazing. As to its size, a circuit breaker, the capacity of which is as large as 2,000,000 KVA is manufactured.

Automatic Voltage Regulator The voltage regulator is now being installed independently or with a converter by power houses in various places, and these regulators are showing excellent results. Recently regulators have been freely installed with 22,000 volt and 150,000 volt pressures in power cables and proved their 100 per cent. efficiency in each case. They are of superior makes, and are being manufactured only by large makers.

Electrode The rise of electro-chemistry and the activities of electrolysis industry have brought about an amazing development in the electrode manufacturing industry. Electrodes of large size and of good quality are now produced in Japan and import of this article has become negligibly small. Principal makers are the Tokai Electrode Co., Ltd., and

the Nippon Carbon Co., Ltd., and companies other than these are merely making raw materials for the same.

Current Limiter In order to rationalize the charge for electric light and also to restrict the abuses of electricity an electric current limiter has been invented and it is actually used by the Osaka City Electric Bureau, the Hanshin Electric Railway Co., the Hanshin Express Electric Railway Co., Ltd., and other electric power supply companies. There are many kinds and types of current limiters, some of which are of very high quality.

Broadcasting Apparatus In any of Japanese broadcasting stations no broadcasting apparatus of domestic make was installed in the past. They were those manufactured by the Marconi Co., Ltd., the International Electric Company, G. E., etc. However, the situation has now been com-

pletely reversed, and apparatus of large capacity are being manufactured by the Nippon Denki Co., Ltd. and the Tokyo Denki Co., Ltd. The Nippon Denki manufactured 100 kilo one for the Hsinking Broadcasting Station in November, 1934.

Dry Cells This industry has made a great progress in these years, and its production now reaches ¥10,000,000 a year. The domestic products not only fulfill the total demand in the country, but they are also being exported to Manchoukuo, China, the South Sea Islands, etc. It was prescribed as one of the principal industries of the country and is controlled as such. It is also now under consideration to include it as one of the principal export articles.

Production Production of electric machinery and instruments in Japan in recent years are as follows:

PRODUCTION OF ELECTRICAL MACHINERY

Year	Dynamos		Electric motors		Rotary converters		Frequency changers	
	No. produced	Value yen	No. produced	Value yen	No. produced	Value yen	No. produced	Value yen
1924				56,626				13,533,719
1925				44,393				29,142,595
1926				51,080				23,661,285
1927				61,131				21,299,433
1928				66,900				20,421,677
1929	13,949	7,913,875	77,039	16,032,609	6,610	1,714,285	9	52,151
1930	10,914	4,415,105	115,420	14,795,641	136	1,578,456	8	109,278
1931	3,953	4,865,869	88,083	10,369,400	1,161	1,082,559	6	22,251
1932	9,748	4,638,302	99,809	9,886,162	1,461	599,177	11	12,184
1933	58,600	7,720,547	195,005	21,553,794	1,259	1,470,000	3	14,006

Year	Transformers		Rectifiers		Electric fans		Electric utensils		Insulated wires	Cables
	No. produced	Value yen	No. produced	Value yen	No. produced	Value yen	No. produced	Value yen		
1924									54,691,792	
1925									49,628,679	
1926									78,025,872	
1927									77,611,760	
1928									92,808,367	
1929	329,388	12,330,728	2,393	189,520	79,834	1,719,114	255,848	1,904,604	36,651,108	21,315,901
1930	387,333	9,307,652	3,628	160,218	88,047	1,855,294	218,797	989,533	27,134,916	18,051,756
1931	341,561	5,883,660	275	315,327	44,019	761,538	535,869	1,180,569	21,441,985	10,421,985
1932	290,887	6,618,334	2,881	156,547	35,328	610,008	542,766	1,311,409	26,329,442	10,180,503
1933	324,167	9,976,642	1,097	278,657	46,041	866,070	733,819	1,415,757	39,487,609	17,850,301

PRODUCTION OF ELECTRICAL INSTRUMENTS

Year	Instruments for wireless communication yen	Instruments for telegraphic & telephonic comm'n yen	Electric batteries		Total yen	Other electrical instruments yen		
			No. produced	Value yen				
1924								
1925					20,386,706			
1926					22,574,011			
1927					26,241,262			
1928					33,149,629			
1929	4,714,704	9,111,019	793,456	6,480,389	25,881,277	5,940,331	12,420,720	39,624,228
1930	6,357,315	9,109,054	205,753	4,144,403	70,576,043	9,658,359	13,802,762	29,294,850
1931	9,582,428	6,234,448	206,278	3,337,901	23,552,992	4,242,700	7,580,601	21,929,303
1932	11,532,221	7,034,435	281,980	3,425,373	33,032,783	5,172,392	8,507,765	24,167,329
1933	19,293,426	7,696,588	358,871	4,819,752	41,729,522	6,636,878	11,456,635	39,175,923

PRODUCTION OF ELECTRIC BULBS, SEARCH LIGHTS, etc.

Year	Electric bulbs		Search-lights		Others yen	Total yen
	No. produced	Value yen	No. produced	Value yen		
1924	55,123,022	17,277,494	—	—	—	—
1925	57,063,338	17,089,352	—	—	—	—
1926	63,630,842	15,225,423	—	—	—	—
1927	87,254,705	26,315,412	—	—	—	—
1928	97,549,985	24,327,175	—	—	—	—
1929	134,183,114	17,763,744	10,344	2,464,676	2,507,385	22,736,805
1930	114,811,775	15,192,305	20,752	2,400,744	3,589,177	21,132,225
1931	202,054,444	18,038,888	—	968,606	3,459,829	22,467,323
1932	286,653,068	19,685,328	169	831,379	4,602,485	25,209,802
1933	340,392,875	21,970,879	174	679,973	6,942,939	29,593,791

Locomotives and Rolling Stock

Of all the mechanical industries, few compare with that of the manufacture of locomotives and rolling stock in largeness of amount of production and value. Nearly 90,000 locomotives, passenger cars, freight cars, electric cars, etc., are owned by the Department of Railways of the Imperial Government, and most of them were manufactured in the Department's works in Omiya, Oi, Hamamatsu-cho in Tokyo, Takatori in Kobé, Kokura, etc. In addition they are manufactured by a few private companies.

When the first railway was constructed, in 1872, between Tokyo and Yokohama, locomotives were imported from Great Britain, so in the

beginning nearly all the locomotives were of English-make, but later they were replaced by locomotives imported from America.

The first locomotive to be manufactured in Japan was turned out by a Kobé mill, now belonging to the Department of Railways, in 1893, and the Kisha Seizo Kaisha turned out its first in 1896. Later, in 1910, the Hyogo mill of the Kawasaki Shipbuilding Co., Ltd., started manufacturing locomotives on a large scale, and about the same time the Department of Railways also began to do the same. From that time locomotive manufacturing developed at a great pace and since 1912 their importation has practically ceased. During the World War, the Nippon Sharyo Kaisha, Ltd., and the Kasado

mill of the Hidachi Seisakusho were established, and in 1924, the Mitsubishi Shipbuilding Co., Ltd. entered the industry, and at present Japanese works are not only filling home requirements but are exporting to Korea, Formosa, Manchoutikuo and China.

The manufacture of passenger cars has also advanced, four and six wheel bogie-cars being made. The highest speed of passenger trains has been increased to 64 m.p.h. and as the Japanese gauge is a narrow one of 3' 6" it has been necessary to make intensive studies to reduce rolling. As the result of the studies, new devices have been applied and good results achieved.

Electric locomotives were imported from Germany in 1912, and since then, with the exception of 14 locomotives which were manufactured at the Omiya Works of the Department of Railways, only imported ones have been used.

Situation in 1934 Through the popularity of cars and locomotives of so-called "streamline form" and the attempt to make higher-grade cars, locomotive and rolling stock manufacturing is showing a great activity, especially in the works which have orders from Manchoukuo. Making of higher grade cars has a direct bearing upon makers of parts and trucks. On account of increased demand for Diesel and gasolene locomotives, the demand for small-sized steam locomotives has somewhat slackened. But on the other hand, the demand for trucks for electric tramway, etc. has increased.

Steam Locomotive Owing to electrification of private railways and the advance made by gasolene cars, it is now very seldom that private railway companies use steam locomotives. Accordingly makers have now hardly any orders coming to them except from the Department of Rail-

ways. Only a few makers are manufacturing small-sized locomotives for mining and public works. Even these are now being driven out by small-sized gasolene or Diesel locomotives. Some makers have, therefore, totally given up the manufacture of steam locomotives and are employing their efforts for the manufacture of locomotives using Diesel engines.

Electric Locomotive On account of the increased electrification of railways, new ideas are constantly put into the improvement of electric locomotives. Important points in improvement are the application of electric arc welding method and lightening of weight. In future, the centre of gravity of locomotives will be lowered and the "streamline form" will be adopted in order to increase the speed. New improvements such as equipments for sprinkling sands to prevent racing, or those to recover lost electric power, will perhaps be made in near future.

Rolling Stock Orders coming from private railway companies on rolling stock are very small, being limited to a few gasolene or ordinary passenger cars. However, makers are well satisfied with orders coming from electric tramway companies, and especially with orders coming from Manchoukuo.

Electric Car Electric cars are divided into those having motors on them and other ordinary cars, which are again subdivided into passenger, freight and emergency cars. Private railway companies want to keep pace with further electrification of the government railways, and intend to electrify their lines and increased distribution of cars and replacement of old cars with new ones will inevitably increase the demand, and the prospect of this industry can be said to be very bright.

Aerial Cable As the safety of aeri-

al cable has come to be recognized, the fever for its construction has become very intense. For the carriage of goods, various mining and cement companies are now changing means of transportation from ground railways into aerial cables, which is making this industry very active.

This activity is being further stimulated by construction of aerial cables in Manchoukuo.

Various Appliances Controller, brake, brake shoe, pointer, separator, etc. are successfully manufactured and mills are active to a greater or less degree.

PRODUCTION OF LOCOMOTIVES AND ROLLING STOCK

Year	Steam locomotives		Electric locomotives		Gas locomotives		Fittings, etc.	Total
	No. produced	Value yen	No. produced	Value yen	No. produced	Value yen		
1924	243			13,021,439			—	13,021,439
1925	218			10,294,412			—	10,294,412
1926	231			13,453,346			—	13,453,346
1927	257			13,091,554			—	13,091,554
1928	287			18,893,825			—	18,893,825
1929	229	13,629,665	36	1,285,567	78	484,250	2,631,372	18,030,854
1930	233	9,400,067	41	884,035	129	1,192,624	270,255	11,748,481
1931	109	5,029,536	47	1,506,247	163	1,454,003	216,223	8,206,009
1932	60	2,976,606	47	503,464	223	1,333,485	298,250	5,111,805
1933	167	6,270,177	29	609,386	288	1,486,822	1,340,408	9,706,793

Year	Coaches and freight cars			Electric cars		Rikisha		Waggons
	No. produced	Value yen	Fittings for coaches and freight cars yen	No. produced	Value yen	Fittings for electric cars yen	No. produced	
1924	5,360	19,577,804	—	868	6,774,094	—	2,316	253,770
1925	4,556	12,349,533	—	643	6,186,726	—	1,536	153,510
1926	3,986	12,122,955	—	828	7,418,375	—	1,277	85,900
1927	3,558	12,760,427	—	582	5,235,179	—	363	46,775
1928	5,597	16,878,994	—	845	7,564,572	—	660	92,100
1929	3,996	14,532,052	919,049	535	5,882,521	1,618,233	1,668	107,750
1930	3,831	9,806,425	1,582,700	355	3,607,416	3,672,732	947	75,610
1931	1,508	3,881,066	221,088	180	2,019,861	1,402,455	1,448	72,060
1932	1,106	3,980,922	181,345	178	1,259,739	213,153	489	50,400
1933	1,452	8,064,776	853,179	120	1,663,722	501,857	550	58,220

Aircraft

Introduction Captain Tokugawa was the first pilot to fly a heavier than air machine in Japan. This was in 1910. The manufacture of aircraft was commenced in the Army and Navy arsenals and, furthermore, many arms of the service from private companies. The manufacture of aeroplanes was greatly encouraged in this way and military and naval aircraft can now be satisfactorily manufactured at home.

History Dr. Ichita Kishi, a phy-

sician, constructed at his own expense various workshops in his own residence at Tsukiji, Tokyo, and, in 1914, with the help of several expert engineers, succeeded in constructing an aeroplane engine, the first to be manufactured in this country. A trial flight of the aeroplane using this engine was very successful, so he manufactured his second aeroplane in 1916. In 1917 Mr. Nakajima, who was an engineer captain in the Navy, manufactured various kinds of aeroplanes with the help of Messrs. Mohei Ishikawa and Sei-

bei Kawanishi. In 1920, the Aichi Tokei Denki Kaisha, Ltd. (Aichi Clock Electric Machinery Co., Ltd.) established an aeroplane department and in 1920 turned out a seaplane. From that time this department has developed rapidly. In 1921, the Kawanishi Machine Company established an aeroplane factory in Hyogo and started the manufacture of seaplanes in 1923. Also, in 1921, the Mitsubishi Aircraft Co., Ltd., had nine experts in aeroplane manufacturing called from Great Britain and began to manufacture both aeroplanes and engines on a large scale. The Kawasaki Shipbuilding Co., Ltd., following in the steps of the Mitsubishi Aircraft Co., Ltd., began manu-

facturing aeroplanes in 1922.

Present State of the Industry Aircraft manufacturing industry showed considerable activity in 1934. Aside from requirements of the military circle, manufacturers received good orders from the public owing to the fact that many contributions of aircrafts were made to the army and navy by different bodies of people. As regards manufacturing of light aeroplanes for transportation purpose, one manufactured by the Tokyo Gas & Electric Co., Ltd. towards the latter part of the year proved a great success. Other aircraft manufacturers received orders on aircrafts of the same type. Manufacturers of aircrafts at present are as follows:

MANUFACTURERS OF AIRCRAFTS

Year	Makers of Bodies	Makers of Motors	Makers of Balloons and Airships	Total
1924	6	3	2	11
1925	6	3	2	11
1926	6	3	2	11
1927	6	4	2	12
1928	6	4	3	13
1929	6	4	3	13
1930	6	4	3	13
1931	7	4	2	13
1932	7	5	2	14
1933	8	5	2	15

Automobile Manufacturing

History The first automobile to be manufactured in Japan was by the Tokyo Motor Car Works, under the management of Mr. S. Yoshida, in the year 1909, but since then progress has been very slow. In 1910, several military motor cars were manufactured for the Army in the Osaka Arsenal, and in 1911, the Tokyo Automobile Factory commenced the manufacture of "DAT" cars.

The Tokyo Gas and Electric Co., Ltd., began to manufacture military automobiles "T. G. E." in 1916, and trucks in 1917. In 1918, the Military Automobile Subsidy Act was put into force and this company was the first

to get a subsidy from the Army Department under the act. Then the Tokyo Ishikawajima Shipbuilding Co., Ltd., began to manufacture passenger cars in 1920. Companies other than the above which are making automobiles are Hakuyo-sha, Ltd., and the Orient Automobile Co.

Present State of the Industry Motor car industry is perhaps the only one in all the heavy industries in Japan which the country has not anything to feel proud of to-day. While there are more than 135,000 cars, buses and trucks of all kinds which are running throughout the country, almost all of them are imported, about 80 per cent. of which being Chevrolet of the General Motors Co. and

Ford. The balance of 20 per cent. consists of those of Chrysler line and a small number of European makes. However, inasmuch as the motor car industry is entirely undeveloped in Japan yet, it can be said that there is a great future for Japan's automobile manufacturing industry.

Passenger Car There are no passenger cars manufactured in Japan which are worthy of mention, except "Atsuta-go" which are modeled after Nash and White and aside from the small model cars of "Datsun" there are no other domestic cars.

Bus and Truck Bus and truck manufacturing by domestic works is slightly better than passenger car making. Each "Chiyoda" manufactured by the Tokyo Gas and Electric Co. and "Sumida" made by the Jidosha Kogyo Kaisha has a long history. The companies are also jointly making "Isuzu" designed by the Department of Commerce and Industry. These three classes of buses and trucks are supplied to the market in considerable numbers. Kyodo Koku-sai Jidosha which was established in 1933 by these two companies is selling domestic trucks and buses of five classes. Aside from this, the Mitsubishi Heavy Industry Co., Ltd. is making large-sized bus "Fuso-go" at its Kobé plant, the Kawasaki Sharyo Kaisha, Ltd. truck and bus "Rokko," and Tokyo Association of Dealers

of Motor Cars is planning to make another kind for trial.

Miniature Motor Car and Motor Cycle The so-called miniature motor cars are those the dimensions and power of which are limited by the "Regulations of Motor Cars" and include such small-sized cars as "Datsun" car, rear cars, etc. Rear cars have made a marvelous development in Japan as a means of carrying small parcels. Their production totalled 15,000 a year, and they are not only in use throughout Japan but are exported to Manchoukuo, the South Sea Islands, etc. Its manufacturing is showing activity due to low exchange rate and increased demand. The sales of small-sized cars like "Datsun", too, are rapidly increasing in number in late years.

Accessories and Parts Accessories and parts of motor cars in Japan were almost exclusively of American makes before replacement of the embargo on gold in 1931. Owing to low exchange rate which followed thereafter import became very difficult and domestic makes came to the front. At present, even parts of Chevrolet or Ford are being replaced by domestic makes. They are now also exported abroad. Countless parts and accessories are made in domestic works, and the quality of these makes is rapidly improving.

PRODUCTION OF AUTOMOBILES AND MOTOR CYCLES

Year	Imported parts assembled		Others		Accessories and parts Value in yen	Total Value in yen	Motor cycles	
	No.	Value in yen	No.	Value in yen			No.	Value in yen
1924				771				982,235
1925				4,092				7,436,435
1926				32,665				18,624,309
1927				10,789				25,256,332
1928				23,347				43,049,420
1929	11,221	12,484,951	18,058	71,177,299	6,219,850	89,884,750	204	112,925
1930	20,596	34,903,822	1,254	3,626,252	4,493,958	43,024,032	793	413,808
1931	19,935	32,099,506	971	2,576,231	6,535,494	41,211,231	1,451	826,320
1932	13,853	28,869,297	710	4,748,608	6,095,992	39,703,897	2,113	1,619,279
1933	14,373	37,690,059	5,600	11,673,754	10,995,149	60,318,962	2,278	1,705,405

Import of Automobiles Due to the backwardness of the automobile industry in Japan, the country has largely relied on the import for their supply in the past. In 1914 the import barely amounted to ¥500,000, but this rapidly increased and in 1929,

it amounted to ¥30,000,000. Owing to depression it dropped to ¥20,000,000 in 1930, and to ¥14,000,000 in 1933, which was the bottom. The figure took an upward course again and rose to ¥33,000,000 in 1934.

IMPORTS OF AUTOMOBILES & ACCESSORIES

Year	Number of automobiles	Value yen	Value of accessories yen	Total values yen
1924	4,063	8,772,851	12,413,272	21,186,123
1925	1,762	4,630,009	7,062,433	11,692,442
1926	2,362	5,324,535	10,397,666	15,722,201
1927	3,895	8,063,063	10,218,909	18,281,971
1928	7,873	13,770,655	18,474,167	32,244,822
1929	5,018	9,545,870	24,062,513	33,608,383
1930	2,591	4,896,992	15,178,000	20,074,992
1931	1,887	3,378,000	12,951,000	16,329,000
1932	997	2,894,000	11,927,000	14,821,000
1933	491	1,864,392	12,517,753	14,382,145
1934	896	3,357,061	29,456,076	32,813,137

Bicycle Manufacturing

History A bicycle was first introduced into Japan in 1881 by an Englishman. In 1889, an American brought a bicycle with him from America. In 1904, frames and other accessories were imported from Great Britain, and the making of bicycles at a lower cost became comparatively easy. In 1906, accessories were imported from the U. S. A. and this time, bicycles became very popular.

Before 1913, accessories other than saddles, rims, and chains were being manufactured at home. Factories capable of manufacturing these latter articles on a large scale did not exist and it was impossible for small scale producers to compete against foreign products. From 1913 on, however, the demand for bicycles increased at great speed, and as the manufacturing of each of the above parts on a large scale became possible, bicycles came to be produced at a very low cost, though until the World War, those manufactured in Japan

could not compete with European-made ones. During the War, the art of manufacturing advanced so much that domestic bicycles could well compete in both quality and price with imported ones, and not only were home demands satisfied, but the Japanese product was exported to China, Russia, India and other countries.

Bicycle in 1934. Bicycles which are used in Japan number 7,000,000, which means that every nine persons own one bicycle. This fairly compares with Holland where the ratio is one bicycle to every seven persons. Moreover, the quality of bicycles made in Japan is so good that no country in the world can compete with her in this respect. To-day export of bicycles and accessories amounts to ¥25,000,000 a year, and bicycles made in Japan can be seen in every country except in Soviet Russia. The industry is now carried out in a perfect division of labour, and manufacturers number 800, who are located in Tokyo, Osaka, Nagoya, Kobé, etc.

Conditions Suitable for Bicycles Conditions in this country are well suited to the use of this vehicle. The factors which have made for the increased demand are:

(1) Individual wealth is comparatively small and the use of automobiles has not yet become universal.

(2) Roads are mostly too narrow, though greatly improved of late, to take automobiles.

(3) The making of bicycles, especially accessories like rims, is purely artisans' work, and is a type of work in which the Japanese people excel.

PRODUCTION OF BICYCLES IN JAPAN

Year	No. produced	Value yen	Value of accessories produced yen
1924	92,172	2,751,270	—
1925	38,229	864,796	—
1926	41,832	1,112,621	—
1927	89,629	3,093,083	—
1928	125,588	3,323,999	—
1929	90,285	2,593,051	16,138,063
1930	136,985	2,790,331	12,206,374
1931	105,088	2,022,013	13,747,255
1932	63,988	1,315,748	20,666,605
1933	115,405	2,164,804	25,396,495

These figures do not include production in factories employing less than 5 persons.

The principal places of production are Tokyo, Osaka, Aichi, Hyogo, and Ishikawa prefectures. Production in each of these prefectures in recent years is as follows:

Prefectures	1931 yen	1932 yen	1933 yen
Tokyo	5,532,820	7,327,974	9,818,150
Osaka	4,666,797	6,830,222	10,567,187
Aichi	2,687,949	2,538,530	3,663,443
Hyogo	1,615,853	2,325,811	2,386,320
Ishikawa	357,023	580,133	661,228

Imports and exports of cycles and accessories since 1923 are as follows:

Year	Imports yen	Exports yen
1924	7,673,000	745,000
1925	5,216,000	2,295,000
1926	5,923,000	1,959,000
1927	3,527,000	1,870,000
1928	1,634,000	2,557,000
1929	1,230,000	3,429,000
1930	1,563,000	5,274,000
1931	1,153,000	7,119,000
1932	795,000	6,028,000
1933	619,000	12,114,000
1934	73,308	18,904,257

Tyres are not included.

Import of Machinery

Import of machinery in 1934 totalled ¥143,590,180, which showed a gain over that of 1933 which was ¥106,574,614. This was due to lower exchange rate and increase of imports of some special machinery on which the demand was strong on account of the general industrial activity in the country. However, this figure was smaller than the 1929 figure of ¥186,832,556. The import as a whole has a declining tendency. This is perhaps due to the following reasons:

(1) The machine manufacturing industry has made a great progress, and,

(2) The depression has reduced the demand for machinery.

The rapid development of industries of many kinds which has taken place since the Restoration has created a great demand for machinery, but as it takes a long time to train experts and workers to produce machines of superior grade, Japan has had, in the past, to import most of her machinery. Now, with careful study and training on the part of her engineers, it has become possible to turn out machines which are not inferior to any imported ones, and Japan can now buy these at comparatively low prices. The depression which started in 1920 has become very acute in late years, and has brought about a great falling

off in the demand for machinery. These two reasons account for the falling off in imports.

Imports of machinery by Japan, excluding automobiles and their accessories, from 1919 to 1928, was

somewhere between ¥100,000,000 and ¥140,000,000. There was a sharp reduction in 1930, and in 1931 it reached the bottom. The latest two years are gaining again. (See Chapter XI.)

IMPORTS OF MACHINERY (unit ¥1,000)

Articles	1928	1929	1930	1931	1932	1933	1934
	yen	yen	yen	yen	yen	yen	yen
Watches and parts thereof	7,900	6,869	4,888	2,161	2,853	2,094	2,684
Clocks and parts thereof	627	616	434	205	140	147	112
Microscopes, etc.	342	456	324	166	255	126	230
Ammeters, voltmeters, etc.	280	328	215	141	101	78	64
Wattmeters	693	907	367	401	211	99	63
Other meters	1,957	2,063	1,465	1,030	1,074	1,526	1,479
Electric batteries, and parts thereof	354	422	259	176	176	106	184
Surgical or orthopaedic instruments	403	484	388	277	311	156	200
Surveying and drawing instruments	667	449	349	422	363	512	97
Registers, calculating machines, typewriters, etc.	1,850	1,924	794	738	590	574	1,020
Scientific instruments	2,524	2,998	2,429	1,017	1,039	1,049	1,003
Cameras, and parts thereof	1,013	1,088	1,423	1,419	966	765	1,419
Gramophones, etc.	376	591	268	240	98	38	41
Musical instruments	929	940	576	375	296	185	183
Telegraphic and telephonic instruments	3,982	3,871	1,832	1,223	1,664	2,989	1,468
Other scientific instruments	—	—	—	—	1,681	2,140	1,265
Fire-arms	2,408	1,967	837	777	5,826	6,451	1,031
Railway carriages, etc.	2,091	1,420	234	132	74	47	66
Boilers	3,349	2,376	3,124	2,237	1,192	1,790	4,091
Locomotives, etc.	905	1,062	544	59	70	156	6
Steam turbines	244	825	1,024	695	182	58	430
Internal combustion engines (weighing not more than 250 kg.)	5,526	7,354	4,460	4,206	2,296	1,826	3,253
Internal combustion engines (weighing not more than 2,500 kg.)	5,108	5,224	3,897	5,486	9,507	13,954	17,277
Internal combustion engines (others)	2,207	5,535	6,119	1,237	667	366	248
Water-turbines and Pelton wheels	559	1,095	36	—	9	—	150
Dynamos, motors, etc. (weighing not more than 100 kg.)	1,813	1,926	1,491	1,126	1,405	1,372	829
Dynamos, motors, etc. (weighing not more than 5,000 kg.)	2,389	1,599	664	285	233	192	146
Dynamos, motors, etc. (others)	2,213	3,306	1,382	587	4	166	248
Transformers	1,015	653	354	162	111	64	85
Dynamos combined with motive machinery	349	1,325	1,199	161	47	112	2
Cranes	279	479	300	284	4	58	13
Capstans and other winding machines	584	1,347	1,215	142	34	117	35
Gas compressors	1,979	2,539	2,024	642	809	669	1,742
Sewing machines and accessories	5,404	9,501	4,066	2,924	3,265	2,183	5,866
Pumps	1,241	1,838	2,017	740	370	726	1,000
Blowing machines	565	1,464	1,436	541	161	145	232
Hydraulic presses	329	133	227	106	6	4	54
Pneumatic tools and machines	1,030	981	453	264	276	256	639
Metal or wood-working machines	4,380	5,622	4,849	3,069	5,8071	16,246	21,433
Spinning machines	10,431	14,486	6,365	3,515	7,998	3,520	6,395
Weaving looms	427	637	279	55	106	12	40
Tissue-finishing machines	292	411	375	161	342	116	62
Knitting machines	178	222	814	145	75	82	1,773
Paper-making machines	379	346	127	38	37	9	—
Printing machines	1,577	1,631	690	195	291	20	225
All other machinery	19,190	24,486	20,767	11,908	12,463	11,440	11,510

Export of Machinery

In 1934 Japan witnessed the highest record in the export of machinery of her own making. The volume of export was ¥124,982,223 which was about double of the preceding year's export of ¥67,622,067. In addition to this the export of tools and other metal manufactures was ¥59,054,665 as against the 1933 figure of ¥42,604,224. The future of Japan's machinery manufacturing depends upon the degree to which her export of machinery expands, and especially upon the development of Manchoukuo market. The invasion of Japanese products into the Dutch East Indian, Indian and other foreign markets is a matter for future prospects. The export of Japan-

made spinning and weaving machines is very promising. Especially the Toyoda Automatic Weaving Machines are very much demanded abroad, where the spinning industry prospers. These machines used to be exported to China, mostly Shanghai, to be used by Japanese spinning mills in Shanghai. Last year 25 machines each equipped with 400 spindles were sent to Ahmedabad spinners in India. Diesel-engines to be fitted with fishing ships are built in Japan and shipped to the Dutch East Indies. A British firm purchased the Toyoda patent for ¥1,000,000, but when the machines were installed in England, a vigorous protest was raised by British mill hands. Japan-made machines exported during the last three years follow:

	1932	1933	1934
	(In ¥1,000)		
Spinning and weaving machines	3,650	4,878	8,378
Electric machines	1,414	2,724	10,055
Printing machines	371	900	1,128
Pumps	344	909	1,572
Boilers	343	577	2,652
Metal and wooden machines	215	566	1,189
Others and total	34,510	67,622	124,982
Destination			
Manchoukuo	394	1,938	5,214
Kwantung Leased Territory	3,953	14,197	65,287
China	3,848	4,951	16,623
Hongkong	107	119	693
British India	900	2,104	8,069
Dutch East Indies	123	312	10,500
Soviet Union	1,179	1,328	2,016
Brazil	73	104	369
Australia	41	31	676

Factories and Operatives

Factories in which various kinds of machinery were manufactured were, in 1933, 7,850; workers and operatives numbered 249,323. These figures include persons engaged in the shipbuilding industries. Fac-

tories showed an increase of 1,112 over the previous year and the number of operatives also increased by 18,427.

Details of the number of mills, operatives, etc., in 1933 were as follows:

MACHINERY AND ENGINEERING

Kind of Machinery	No. of mills	Total No. of employees	Officials		Total
			Males	Females	
Boilers	68	1,663	168	10	178
Appliances for gas production	6	258	46	2	48
Motors	434	9,715	1,141	58	1,199
Steam engines and turbines	11	122	11	—	11
Internal combustion engines	423	9,181	1,044	46	1,090
Water wheels	5	412	86	12	98
Electrical machinery and instruments	407	26,835	3,583	202	3,785
Cables and insulated wires	86	6,667	960	66	1,026
Telegraphic and telephone instruments	164	8,982	1,653	153	1,808
Electric batteries	52	3,847	458	18	476
Agricultural implements	293	3,332	318	7	325
Machinery for building and public works, etc.	66	1,331	139	4	143
" " mining	39	2,247	287	22	309
Spinning and textile machinery	603	21,605	1,651	119	1,770
Manufacturing machinery and instruments	493	11,379	985	34	1,019
Machinery for cement industry	52	943	79	—	79
" " paper making	25	663	102	3	105
Machinery for chemical industry	85	3,397	431	20	451
" " foodstuff industry	141	2,361	344	21	365
Printing machinery	278	3,894	404	23	427
Other machinery and instruments	233	2,809	226	4	230
Elevators	11	308	64	4	68
Cranes	43	1,206	196	2	198
Pumps	116	2,331	300	29	329
Hydraulic press, air compressors, etc.	33	1,713	203	10	213
Rules, measures, scales, gauges, etc.	144	4,098	525	20	545
Meters, etc.	76	4,014	772	58	830
Clocks, watches, etc.	77	5,625	248	15	263
Testing machines, scientific instruments.	31	1,249	162	4	166
Surgical instruments	106	1,198	113	5	118
Surveying and drawing instruments	23	312	23	—	23
Calculating machines, registers, typewriters, etc.	22	1,027	122	6	128
Cameras, projectors, kinetoscopes	27	1,113	110	1	111
Electric bulbs, etc.	373	12,502	1,008	96	1,104
Optical instruments	50	3,376	587	57	644
Glasses	6	100	6	1	7
Musical instruments	31	2,185	206	4	210
Gramophones	7	1,306	191	19	210
Arms	67	9,861	717	49	766
Locomotives, rolling stock	53	11,393	863	35	898
Automobiles	475	13,027	1,817	98	1,915
Bicycles	545	12,806	812	32	844
Other vehicles	91	845	67	1	68
Shipbuilding	360	45,692	4,545	201	4,746
Tackles	14	80	8	—	8
Aircrafts	81	16,780	1,076	123	1,199
Safes	45	790	68	2	70
Appliances for gas	45	630	58	7	65
Appliances for waterworks	46	498	43	—	43
Valves, cocks, etc.	109	1,743	131	1	132
Flywheels, gears, etc.	139	3,070	349	14	363
Other machinery and instruments	1,059	18,831	1,910	61	1,971
Government plants for machinery and instruments	340	81,208	4,275	62	4,287
Total	8,190	372,863	34,550	1,785	6,258

OPERATIVES

Kind of Machinery	Operatives		Total	Others		Total
	Males	Females		Males	Females	
Boilers	1,400	56	1,456	26	3	29
Appliances for gas production	201	—	201	4	3	7
Motors	7,970	310	8,280	205	31	236
Steam engines and turbines	111	—	111	—	—	—
Internal combustion engines	7,561	307	7,868	192	31	223
Water wheels	298	3	301	13	—	13
Electric machinery and instruments	18,493	2,794	21,287	1,250	513	1,763
Cables and insulated wires	3,571	1,669	5,240	272	129	401
Telegraphic and telephonic instruments	5,012	1,946	6,958	163	53	216
Electric batteries	2,340	843	3,183	145	43	188
Agricultural implements	2,900	58	2,958	43	6	49
Machinery for buildings and public works	1,135	23	1,158	26	4	30
Machinery for mining	1,862	13	1,875	52	11	63
Spinning and textile machinery	17,401	1,530	18,931	812	92	904
Manufacturing machinery and instruments	9,807	167	9,974	4	1	5
Machinery for paper making	544	—	544	9	5	14
Machinery for chemical industry	2,771	71	2,842	93	11	104
Machinery for foodstuff industry	1,863	5	1,868	121	7	128
Printing machinery	3,021	350	3,371	84	12	96
Other machinery and instruments	2,425	83	2,508	65	6	73
Elevators	232	3	235	3	2	5
Cranes	957	6	963	43	2	45
Pumps	1,873	5	1,878	116	8	124
Hydraulic press, air compressors, etc.	1,428	1	1,429	63	8	71
Rules, measures, scales, gauges, etc.	3,084	297	3,381	155	17	172
Meters	2,778	318	3,094	77	13	90
Clocks, watches, etc.	3,903	1,233	5,136	168	58	226
Testing machines and scientific instruments	1,008	71	1,079	3	1	4
Surgical instruments	1,002	48	1,050	26	4	31
Surveying and drawing instruments	283	2	285	3	1	4
Calculating machines, registers, typewriters, etc.	794	50	844	38	17	55
Cameras, projectors, kinetoscopes	776	213	989	11	2	13
Electric bulbs, etc.	5,989	5,186	11,172	162	64	226
Optical instruments	2,386	202	2,588	128	16	144
Glasses	72	8	80	10	3	13
Musical instruments	1,584	333	1,922	43	10	53
Gramophones	861	216	1,077	17	2	19
Arms	8,446	406	8,852	175	68	243
Locomotives and rolling stock	9,859	71	9,930	498	67	565
Automobiles	10,416	131	10,550	468	94	562
Bicycles	10,913	770	11,683	239	40	279
Other vehicles	762	9	771	6	—	6
Shipbuilding	38,758	310	39,068	1,527	351	1,878
Tackles	72	—	72	—	—	—
Aircrafts	14,716	531	15,247	220	114	334
Safes	644	1	645	74	1	75
Appliances for gas	572	7	579	5	1	6
Appliances for waterworks	442	7	449	5	1	6
Valves, cocks, etc.	1,561	30	1,591	18	2	20
Flywheels, gears, etc.	2,533	61	2,594	100	13	113
Other machinery and instruments	16,274	319	16,593	229	38	269
Machinery and instruments for Government plants	59,128	549	59,677	16,306	938	17,244
Total	287,668	21,332	309,000	24,640	2,938	27,578

Shipbuilding

Introduction

The mercantile shipbuilding industry in Japan developed with the shipping business, while the development of warship building was mainly due to the urgent demands created by the Sino-Japanese and the Russo-Japanese Wars.

Owing to the construction of new vessels to be placed on subsidized lines, easy money and low interest rates, the shipbuilding industry which had been depressed since the close of the World War, revived and boomed temporarily in 1928. Tonnage output, which in 1919 amounted to as much as 674,000 tons, dropped to 58,000 tons in 1926. This was increased to 112,583 tons in 1928, and to 167,365 tons in 1929. However, as the improvement was brought about artificially and not by general improvements in economic conditions, the industry soon became dull again, and was further depressed by the enforcement of the conditions of the London Disarmament Agreement. Naval orders to private shipbuilding companies were reduced by 30%, which, together with the decreased orders from private transportation companies reduced the 1931 output to 84,004 tons and in 1932 to 58,763 tons.

Shipbuilding in 1934

Owing, however, to the subsidies granted by the Department of Communications since 1932 for the im-

provement of steamers, shipbuilding industries have shown some activities since. The subsidies were granted with an aim of constructing 200,000 tons of new steamers, and closed at the end of March, 1935. The second subsidies will follow and the shipbuilding industry will be more than ever busy. Furthermore, the supplementary plan of the Navy is benefiting authorized dockyards, while orders on cruisers, destroyers, torpedo boats, submarine sweepers, etc. are making other shipyards very busy and prosperous. In addition to this, due to the low exchange rate, enquiries for steamers are forthcoming from Brazil, Siam, Italy, France, Sweden, Soviet Russia, Manchoukuo, China, etc. Statistics as of August 1, 1934 shows that those steamers, the displacement of which is over 100 tons, and which were on keel on that date numbered 104 with total displacement of 143,016 tons, which is the highest record shown since April, 1930. It must not be overlooked that the tendency since 1933 is that small and medium-sized steamers with fast speed are in great demand. On August 1, 1934, the number of steamers whose displacement was less than 1,000 tons numbered 84, which was 80 per cent. of the total order. In 1933 there were 360 shipbuilding yards of which 55 build steel vessels while the remaining 305 yards other kinds of vessels. The statistics on various phases of the industry follow:

PRODUCTION OF VESSELS

Year	Steel Vessels		Ships of Other Classes		Total Value in yen	Fittings of ships in yen
	No.	Value	No.	Value		
1924			1,901		74,322,898	3,712,782
1925			1,443		66,497,022	4,084,449
1926			1,956		62,608,381	2,386,822
1927			1,433		65,930,642	1,583,123
1928			1,890		48,894,095	1,872,064

Year	Steel Vessels		Ships of Other Classes		Total Value in yen	Fittings of ships in yen
	No.	Value	No.	Value		
1929	846	45,108,579	2,611	79,600,721	52,709,300	1,090,042
1930	269	111,590,483	2,376	3,547,239	115,137,722	807,727
1931	245	34,991,786	1,840	3,184,897	38,176,683	638,378
1932	509	44,224,579	1,987	1,880,400	45,104,979	475,363
1933	336	85,666,717	2,558	2,767,288	38,434,005	316,170

NUMBER OF OFFICIALS, TECHNICIANS AND WORKMEN IN DOCKYARDS EMPLOYING MORE THAN 5 PERSONS

End of	Officials	Technicians	Workmen	Others	Total
1924	2,436	3,459	96,109	2,355	104,359
1925	2,316	3,323	81,920	2,685	90,244
1926	2,507	3,393	86,391	2,192	94,283
1927	2,281	3,380	93,807	2,142	101,610
1928	2,628	3,464	91,237	3,110	100,439
1929	2,546	3,376	49,855	3,762	59,539
1930	2,224	3,002	38,036	3,675	46,937
1931	2,053	2,805	33,449	1,207	39,514
1932	1,832	2,495	33,611	1,262	39,200
1933	2,069	2,677	39,068	1,878	45,692

NUMBER OF GRIDIRONS AND WORKMEN EMPLOYED IN DOCKYARDS CAPABLE OF BUILDING VESSELS OVER 1,000 tons

At the end of	Workmen		Gridirons	
	No.	Percentage %	No.	Index (1919 as 100)
Sept. 1919	81,823	100	89	100
" " 1920	77,798	95	90	101
" June 1921	72,893	89	94	106
" " 1922	53,603	66	90	101
" Dec. 1923	42,330	52	83	93
" June 1924	43,986	54	84	94
" " 1925	45,711	55	82	92
" " 1926	37,413	46	79	89
" " 1927	37,491	46	77	87
" " 1928	40,448	49	75	84
" " 1929	42,568	52	77	87
" Dec. 1930	33,077	40	75	84
" " 1931	33,449	40	75	84
" " 1932	33,611	41	75	84

VESSELS OVER 100 tons LAUNCHED IN JAPAN

Year	No.	Index (1919 as 100)		Year	No.	Index (1919 as 100)	
		Tonnage	Index			Tonnage	Index
1919	356	674,479	100	1927	35	53,390	8
1920	198	460,108	68	1928	53	112,583	17
1921	81	227,792	34	1929	79	167,365	25
1922	71	73,243	11	1930	60	154,231	23
1923	57	76,784	11	1931	49	84,004	12
1924	45	72,808	11	1932	66	58,763	8
1925	39	55,949	8	1933	67	79,820	11
1926	32	52,922	8				

CHAPTER XX

UTILITIES

Electricity

Historical Survey

The electric light and power industry in this country dates from November, 1887, when the Tokyo Electric Light Company undertook to light 75 incandescent lamps, using a home-made generator installed at the first commercial plant at Nihonbashi, Tokyo.

Hydro-electric power production was started in 1891 in Kyoto in connection with Lake Biwa canal works. Two motors with 80 kw. each were installed.

The electric railway industry began with the establishment of the Kyoto Electric Railway Co., Ltd., in 1895, followed by the Nagoya Electric Railway Co., Ltd., in 1898. With respect to long distance transmission of electric power, Koriyama Kenshi Boseki Kaisha, Ltd. (Koriyama Silk Spinning Co., Ltd.) succeeded, in 1889, in transmitting 10,000 volts 15 miles. In 1907, Tokyo Electric Light Co., Ltd., completed the hydro-electric power station of 15,000 kw. in Komabashi, Yamanashi prefecture, and succeeded in transmitting 55,000 volts for a distance of 50 miles. This marked a new era for the hydro-electric industry.

The Hydro-Electric Industry

For over 15 years after the electric power industry was first started, coal produced electric power was supreme, and the development of the hydro-electric industry was very slow. In 1903, of the total electric

power of 44,000 kw., 31,000 kw. were produced by coal, the remaining 13,000 kw. were generated by water. However, after the Russo-Japanese War, the hydro-electric industry developed very quickly.

About that time, in view of the success in transmission of power for long distances, the Temporary Investigation Bureau of Hydro-Electric Power was established under the direct supervision of the Minister of Communications, and investigations as to the available water power were made throughout the country. As the result of these investigations and encouragement from the Bureau, hydro-electric power production quickly developed and by 1912 had increased to 233,000 kw. exceeding the thermally produced power by 4,500 kw. Development during and after the World War was rapid, especially after the great earthquake in the Kanto District in 1923. In 1933 the hydro-electric power developed totalled 3,168,705 k.w., while the thermal power amounted to 1,827,131 k.w. The rapid increase in production finally resulted in an over-supply of power, a factor which later became the weakness of the industry. However, a combination of factors has aided the industry to regain prosperity. After some years of practical idleness it has resumed construction of hydro-electric plants, and according to the Electric Bureau, Communications Ministry, work was in progress on 22 sites at the end of 1934 on the erection of plants with a combined capacity of 428,360 kilo-

watts, of which 420,000 kilowatts will be hydro-electric. Most of the work is expected to be completed by the end of 1935.

Present Position of Hydro- and Thermal Electric Industry

During 1931, the price of coal declined, and the cost of thermal electric power became lower than hydro-electric power, and from that time on thermal power began to draw attention. In 1934, owing to an increased demand for electric power, new plans for obtaining the source of power were contemplated, in which thermal power came to occupy an important position, inasmuch as it was then considered as an independent source, and not as a supplementary source to water power. In the same year the Kwansai Kyodo Kwaryoku Co. (thermal power), which was established to facilitate the plan of control of power, began to operate. The demand for power was so large that it exceeded the supply, and the company is obliged to increase its capacity to 250,000 k.w. before the end of 1935. In Kyushu districts, the Kyushu Kyodo Kwaryoku Co. was established in December, 1934. So also in Kwanto districts, a plan to establish the Kwanto Kyodo Kwaryoku Co., with a view to unifying the work of control of power, was advanced.

The Tokyo Electric Light has completed a plan to get 100,000 k.w. from the thermal source at Tsurumi before the end of 1935. The Daido Electric Power and the Toho Electric Power are each following suit in increasing about 45,000 k.w. through thermal source, and thermal electric industry is changing its position as from a supplementary to an independent one.

COMPARISON OF ELECTRIC POWER GENERATED (in k.w.)

Year	Hydro-electric	Thermal	Total
1907	38,622	76,238	114,910
1912	233,339	228,864	462,203
1917	511,090	364,474	875,568
1918	597,124	386,842	983,966
1919	710,929	422,314	1,133,243
1920	825,387	552,159	1,377,546
1921	914,744	611,974	1,526,718
1922	1,070,060	709,113	1,779,173
1923	1,307,706	755,079	2,062,785
1924	1,474,357	763,146	2,237,503
1925	1,813,608	954,633	2,768,141
1926	1,965,970	1,236,644	3,202,614
1927	2,111,087	1,356,044	3,467,131
1928	2,290,351	1,531,703	3,822,054
1929	2,581,949	1,611,674	4,193,623
1930	2,797,637	1,601,677	4,399,314
1931	3,056,936	1,599,588	4,656,524
1932	3,105,930	1,827,131	4,933,061
1933	3,168,705	1,912,037	5,080,742

The quantity of power generated in Japan proper according to the report of 96 electric suppliers, who supply 95 per cent. of the total electric power in Japan, classified according to hydro- and thermal sources, and also by month, since December, 1933, follows:

QUANTITY OF POWER CONSUMED BY MONTH

Districts	(in 1,000 K. W. H.)								
	Honshu			Shikoku			Kyushu		
	Hydro	Thermal	Total	Hydro	Thermal	Total	Hydro	Thermal	Total
Dec. 1933	1,001,609	320,215	1,331,824	27,301	9,014	36,315	132,740	83,173	215,915
Total 1933	12,020,726	2,056,323	14,077,054	330,354	27,285	357,639	1,814,341	611,085	2,425,426
1934									
Jan.	856,447	410,320	1,266,767	23,515	9,402	32,917	115,007	89,035	204,042
Feb.	709,610	438,728	1,148,338	25,914	5,409	31,323	105,510	82,391	187,901
March	946,527	338,036	1,284,563	30,206	5,296	35,502	127,534	77,529	205,063

Districts	Honshu			Shikoku			Kyushu		
	Hydro	Thermal	Total	Hydro	Thermal	Total	Hydro	Thermal	Total
April	1,145,620	109,808	1,255,428	31,971	23	31,994	147,758	63,316	211,074
May	1,176,157	120,417	1,296,574	32,662	944	33,606	136,607	79,558	216,165
June	1,072,645	158,688	1,231,333	29,515	4,417	33,932	120,125	81,855	201,980
July	1,095,045	158,506	1,253,551	33,334	3,770	37,104	114,506	77,208	191,714
Aug.	1,065,826	176,867	1,242,693	21,873	14,894	36,767	107,361	86,709	194,070
Sept.	1,065,579	129,907	1,195,486	33,487	1,783	35,270	150,282	63,470	213,752
Oct.	1,221,223	174,491	1,395,714	36,483	817	37,300	172,250	65,747	237,997
Nov.	1,189,063	193,657	1,382,720	35,624	3,765	39,389	132,507	87,359	219,866
Dec.	1,146,430	347,870	1,494,300	33,310	8,837	42,147	123,843	100,976	224,819
Total 1934	2,690,172	2,756,795	5,446,967	372,894	59,357	432,251	1,553,290	1,555,153	3,108,443
1935									
Jan.	1,063,961	350,515	1,414,476	28,573	13,936	42,509	122,263	96,872	219,135
Feb.	932,457	357,124	1,289,581	29,449	7,541	36,990	109,118	94,222	203,340
Mar.	1,179,082	262,846	1,441,928	35,898	4,986	40,884	142,436	85,377	227,813

Districts	Hokkaido			Total of the country		
	Hydro	Thermal	Total	Hydro	Total of the country	Total of the country
Dec. 1934	58,222	804	59,026	1,229,572	413,208	1,642,780
Total 1933	534,977	8,430	543,407	14,700,398	2,708,128	17,408,526
1935						
Jan.	53,653	1,921	55,574	1,053,622	510,678	1,564,300
Feb.	49,468	2,630	52,098	890,502	529,158	1,419,660
March	48,561	3,534	52,095	1,152,823	424,305	1,577,223
Apr.	54,197	1,154	55,351	1,379,546	174,301	1,553,847
May	56,765	717	57,482	1,402,191	201,636	1,603,827
June	55,010	658	55,668	1,277,295	245,618	1,522,913
July	55,584	5,814	61,398	1,298,469	245,298	1,543,767
Aug.	55,998	1,001	56,999	1,251,058	274,440	1,525,498
Sept.	55,203	897	56,100	1,304,551	196,057	1,500,608
Oct.	60,208	1,099	61,307	1,490,164	242,154	1,732,318
Nov.	61,296	1,536	62,832	1,418,490	286,317	1,704,807
Dec.	62,116	1,951	64,067	1,365,699	459,634	1,825,333
Total 1934	668,059	22,912	690,971	15,284,415	3,794,217	19,078,632
1935						
Jan.	54,791	5,097	59,888	1,269,588	466,420	1,736,008
Feb.	43,389	5,931	49,320	1,119,413	464,818	1,584,231
March	51,942	5,276	57,218	1,409,408	358,485	1,767,893

Trend of Demand

For Lighting In 1933 the number of electric-lighted households reduced by 147,205 as compared with the previous year. In the number of lamps, however, the ever advancing tendency was kept unchanged.

In 1933 the average consumer had 3.39 lamps and the average lamp used 21 candle power. These figures contrast with 2.4 lamps and 11.9

candle power in 1917. Of the total number of electric lamps which amounted to 38,382,771 in 1933, demand in the 122 cities comprised 57 per cent. or 21,864,282 in number, and the average number of lamps used in an urban household was 5.0.

The growth of the demand for power for lighting purposes in the country as a whole and in the prefectures, in 1933, is as shown in the following two tables:

GROWTH OF DEMAND FOR POWER FOR LIGHTING

Year	No. of consumers	No. of lamps	Candle-power for these lights	Electric power for these lamps kw.
1923	8,305,218	21,687,810	834,162,383	430,014
1924	8,976,991	24,447,632	404,210,635	556,211
1925	9,652,058	27,320,740	461,073,576	574,268
1926	10,165,739	30,159,042	547,918,369	683,584
1927	10,547,235	32,322,991	605,604,846	736,160
1928	10,847,432	33,909,420	656,348,698	797,458
1929	11,170,618	35,893,353	704,634,862	863,046
1930	11,352,372	36,839,607	723,869,987	887,703
1931	11,446,539	37,413,988	782,840,943	959,144
1932	11,530,440	38,048,418	799,183,116	978,846
1933	11,383,235	38,382,771	810,000,000	990,000

ELECTRIC LIGHTING IN THE VARIOUS PREFECTURES AT THE END OF 1933

(Number of lights per 100 persons)

Prefecture	Number	Prefecture	Number	Prefecture	Number	Prefecture	Number
Tokyo	115.4	Yamanashi	49.0	Osaka	89.9	Hiroshima	59.9
Kanagawa	74.8	Aichi	66.4	Kyoto	115.8	Tottori	46.1
Saitama	38.0	Miyé	49.8	Hyogo	68.1	Shimane	46.4
Gumma	44.2	Gifu	51.5	Nara	62.9	Okayama	58.0
Chiba	38.9	Nagano	45.8	Shiga	58.2	Yamaguchi	36.4
Ibaraki	30.0	Fukui	70.0	Wakayama	51.8	Kagawa	47.7
Tochigi	34.2	Ishikawa	63.6	Tokushima	42.8	Fhimé	43.2
Shizuoka	53.5	Toyama	56.3	Kochi	42.0	Kumamoto	48.8
Nagasaki	36.1	Miyazaki	38.3	Niigata	48.5	Yamagata	35.2
Fukuoka	55.2	Kagoshima	25.6	Fukushima	29.9	Akita	29.0
Oita	52.4	Okinawa	6.1	Iwate	23.0	Hokkaido	36.2
Saga	45.3	Miyagi	38.1	Aomori	36.2	Average	57.1

For Power Purposes The increase of demand for electric power is even more marked than that for light. At the end of 1931, the number of motors obtaining power from electric power suppliers was 390,000 and the power supplied 1,320,000 h.p. The number of motors getting supplies from their own plants or from Government official plants was 129,000, the amount of power drawn being 2,513,000 h.p. This made a total of 519,000 motors and 3,833,000 h.p. and when compared with figures of 1922, the number of motors had trebled, while the h.p. had doubled.

Electric power supplied for purposes other than lighting or motive power, i.e., power supplied to the electro-chemical industry or for family use, amounted, at the end

of 1932, to 951,412 kw., four times as much as that supplied in 1922. The increase of demand for electric power for private purposes deserves special notice and the following two tables show the growth of demand for electric power, since 1922, and the chief consuming industries.

AMOUNT OF ELECTRIC POWER SUPPLIED TO VARIOUS KINDS OF INDUSTRIES IN 1933

(in 1,000 k.w.)

Textile industry	516
Metal "	258
Machinery industry	147
Ceramics "	170
Chemical "	562
Saw mills and wood-working industry	135
Printing and bookbinding industry	21
Foodstuff industry	291
Mining "	366
Agricultural and aquatic industries	69
Others	715
Total	3,255

INCREASING DEMAND FOR ELECTRIC POWER

Year	Electric motors		No. of kw. supplied for other electrical equipment kw.
	No. of motors	Horse-power	
1923	204,954	1,726,737	232,604
1924	243,756	1,823,235	274,367
1925	261,592	2,087,008	303,983
1926	298,956	2,292,690	341,981
1927	339,737	2,404,569	446,366
1928	412,156	3,050,390	685,054
1929	456,793	3,319,217	689,811
1930	497,757	3,577,410	864,095
1931	519,765	3,832,517	929,510
1932	565,602	3,834,462	951,412
1933	—	4,864,257	—

Manufacturing Industries
Using Electric Power

Electrical Machinery and Apparatus
Electric power is consumed, in addition to running electric motors and illuminating electric lamps, for manufacturing various electrical machinery and apparatus, electric bulbs, electric wire and cables. Electrical machinery and apparatus were originally mostly imported from abroad, but a manufacturing industry has gradually developed in this country, the development during the World War being particularly remarkable, and now large quantities of electrical equipment are being exported. The production in the last ten years is as shown below. In 1927 there were but 54,600 motors in the textile and dyeing industries, with an aver-

age capacity of 6.2 h.p. At the end of 1932 there were 123,200 motors, and the average horse power was 6.6 h.p. In the mechanical industries the gains have been even more pronounced. There the corresponding figures are 21,500 motors and 18.3 h.p. for 1927 and 75,200 motors and 8.03 h.p. for 1932. Over that six-year period the number of motors expanded 66 per cent. and horse power 59 per cent. and the average size of motor has fallen 57 per cent. The decline in the average size of motor is no reason of discouragement. On the contrary, it is a sign that electricity is finding its way into the smaller factories, into the machine shops, in other words, into the plants where it can save the most money.

Figures on the output of electric equipments during 1924-33 follow:

PRODUCTION OF ELECTRICAL MACHINES AND APPARATUS

Year	Electric machines and apparatus	Electric bulbs	Electric wires and cables	Total
	yen	yen	yen	
1924	88,764,000	18,030,000	87,738,000	194,331,000
1925	98,919,000	17,586,000	104,620,000	221,125,000
1926	105,202,000	16,106,000	113,551,000	234,859,000
1927	94,002,000	25,685,000	107,287,000	226,974,000
1928	125,395,000	26,817,000	109,742,000	261,954,000
1929	126,738,000	29,088,000	110,543,000	266,369,000
1930	106,840,000	23,216,000	73,725,000	203,781,000
1931	73,435,000	17,811,000	51,424,000	142,670,000
1932	76,310,000	15,577,000	47,281,000	141,168,000
1933	112,080,000	23,446,000	79,774,000	215,300,000

Electro-chemical Industry Stimulated by the development of various other industries there has been much progress in the electro-chemical industry, especially during the World War. The industry received a heavy blow when the reaction set in after the War, but as the variety of com-

modities produced by electricity expanded recovery was soon achieved. Production was originally confined to electro-copper, calcium carbonate and nitrogenous fertilizers, but of late years many new lines, as seen from the following table, have been added.

PRODUCTION OF ELECTRO-CHEMICAL INDUSTRIES

	(in ¥1,000)					
	1928	1929	1930	1931	1932	1933
Carbonate of lime, nitrogen and sulphate of ammonia	35,816	39,147	37,004	25,757	22,583	33,851
Phosphorous	698	203	562	575	680	1,247
Tin	1,422	1,362	1,522	1,170	1,890	3,026
Caustic soda	4,111	3,984	4,642	2,874	3,430	10,465
Electro-copper, gold, silver and alum	73,751	89,799	66,025	52,642	63,242	87,068
Iron, copper and alloyed iron	6,273	5,067	6,913	3,449	7,692	18,038
Electro-zinc and bismuth	2,832	2,564	3,159	1,047	927	—
Bleaching powder	4,320	3,855	4,168	1,399	1,318	3,775
Solidified oil	590	711	1,292	1,125	3,018	3,104
Others	13,570	5,259	6,429	4,174	3,086	10,847
Total	143,383	152,011	131,516	94,221	106,866	171,421

Electric Railway

The first electrification of railway was in 1904 on a part of the Koku Railway, but since then great developments have been witnessed. The Communications Ministry was none too pleased with the multitude of applications for electric transportation permits. There is a feeling that the time has come to stop expansion of the electric lines of the country and to endeavour to restore a modicum of sense to the business. Private lines have almost doubled in number and more than doubled in mileage in the past 10 years. But the number of passengers has risen relatively little. In fact, ever since 1929 the passengers have been declining and in 1932 and 1933 there were fewer than in 1926.

This loss has been due to duplication of services, to bus lines and to

the increased efficiency of the Government lines.

In 1932 there were 208 electric railway companies who supplied electric power to their own business and others, and the total power generated by them was 627,302 k.w. As to the results of the electric railway business both Governmental and private see Chapter XXV.

Electric Power Suppliers

The following tables show the number of suppliers of electric power and power supplied in 1933. Among the industries, many electric railways are operating their business on power purchased from power suppliers 30 per cent. of whom are themselves obtaining supplies from others. In the case of private, semi-private and Government-owned plants, most of them are buying about 65 per cent. of their requirements from electric companies.

The tables show also that the upward movement in the number of power supplying companies has practically come to an end. This does not mean that there no longer is any expansion, but that mergers are almost keeping pace with the establishment of new suppliers. Between 1932 and 1933 the number of operating concerns rose by but two. At the same time, operating companies which buy power rose from 391 to 417, so that the number of those generating dropped from 425 to 401.

POWER SUPPLY COMPANIES

Year	Generating			Total	
	Water	Steam	Purchasing		
1928	Opened	449	52	263	764
	Unopened	15	8	55	78
	Total	464	60	318	842
1931	Opened	305	45	385	733
	Unopened	5	7	28	40
	Total	310	52	411	733
1932	Opened	366	59	391	816
	Unopened	8	5	21	34
	Total	374	64	412	850
1933	Opened	345	56	417	818
	Unopened	7	3	15	25
	Total	352	59	433	843

POWER SUPPLIED BY DIFFERENT CLASSES OF SUPPLIERS IN 1933

Suppliers of power	(in k.w.)			Total
	In operation	To be operated	Total	
Power supply companies	3,094,282	951,605	4,045,887	
Electric railway	71,178	52,452	123,630	
Electric supply and electric railway	1,347,344	772,119	2,119,463	
Total	4,512,804	1,776,176	6,288,980	
Semi-private	29,765	35,942	65,707	
Private	527,579	109,308	636,887	
Governmental	10,594	1,166	11,760	
Total	567,938	146,416	714,354	
Grand total	5,080,742	1,922,592	7,003,334	

POWER SUPPLIED CLASSIFIED ACCORDING TO SOURCES OF ELECTRIC POWER IN 1933

Sources of power	(in k.w.)		
	In operation	To be operated	Total
Water power	3,168,705	1,504,098	4,672,803
Steam power	1,861,647	413,622	2,275,269
Gas power	50,890	4,872	55,262
Total	5,080,742	1,922,592	7,003,334

Electrical Power Establishments and Increase of Power

In the eleven years 1922-33 both the number of establishments and power generated increased by from one-and-a-half to two times. Along with the great development in hydro-electric power stations a noteworthy increase in the number of thermal power stations took place. Hydro-electric power is generated on a very large scale and can be supplied at a much lower cost, so many industries have found it more profitable to operate machinery by purchasing power from large suppliers rather than generate their own or buy from small thermal producers.

In 1933 there was a sharp gain in the number of companies generating electricity. Contrasted to the 1932 advance of 302 companies making their own power, the 1933 figure was 767. Practically all the gain was in private companies, 731 to be exact, against 216 in 1932.

Installations which are being made are mostly small. In 1930 the average size of the 5,661 private plants was only 131 k.w. In 1932 the 6,226 private plants averaged 74 k.w. In 1933 the average for 6,957 installations was 75 k.w. Electrification is obviously spreading to the small factories.

INCREASE OF ELECTRIC POWER ESTABLISHMENTS (1923-1933)

Year	Power supply and Electric Railway Companies	Private and Government owned			Total
		Hydro	Thermal	Purchasing	
1923	In operation	466	72	164	702
	To be operated	38	17	31	86
	Total	504	89	195	788
1924	In operation	438	63	228	729
	To be operated	27	19	47	93
	Total	465	82	275	822
1925	In operation	413	62	263	738
	To be operated	24	12	40	76
	Total	437	74	303	814
1926	In operation	428	60	244	732
	To be operated	20	12	46	78
	Total	448	72	290	810
1927	In operation	398	57	273	728
	To be operated	19	5	43	67
	Total	417	62	316	795
1928	In operation	405	52	263	720
	To be operated	15	8	155	78
	Total	420	60	318	798
1929	In operation	371	49	312	732
	To be operated	14	6	38	58
	Total	385	55	350	790
1930	In operation	358	41	334	733
	To be operated	6	5	35	46
	Total	364	46	369	779
1931	In operation	305	45	383	733
	To be operated	5	7	28	40
	Total	310	52	411	773
1932	In operation	366	59	391	816
	To be operated	8	5	21	34
	Total	374	64	412	850
1933	In operation	—	—	—	818
	To be operated	—	—	—	25
	Total	—	—	—	843

Year	Power supply and Electric Railway Companies	Total			Total
		Hydro	Thermal	Purchasing	
1923	In operation	1,251	1,647	1,924	4,822
	To be operated	199	40	103	342
	Total	1,450	1,687	2,027	5,164
1924	In operation	1,206	1,472	2,248	4,926
	To be operated	196	42	130	368
	Total	1,402	1,514	2,378	5,294
1925	In operation	1,365	1,338	2,644	5,350
	To be operated	229	31	133	393
	Total	1,596	1,369	2,778	5,543
1926	In operation	1,419	1,166	2,902	5,487
	To be operated	181	31	122	334
	Total	1,600	1,197	3,024	5,821
1927	In operation	1,444	1,034	3,472	5,951
	To be operated	221	32	171	424
	Total	1,665	1,066	3,644	6,375
1928	In operation	1,479	1,006	3,621	6,106
	To be operated	197	20	135	352
	Total	1,676	1,026	3,756	6,458
1929	In operation	1,440	933	3,901	6,274
	To be operated	165	25	176	366
	Total	1,605	958	4,077	6,640

Year	Total			Total
	Hydro	Thermal	Purchasing	
1930	1,451	885	4,872	6,708
	144	18	151	313
	1,595	903	4,523	7,021
1931	1,423	916	4,757	7,096
	121	47	147	315
	1,544	963	4,904	7,411
1932	1,514	985	4,899	7,398
	106	42	174	322
	1,620	1,027	5,073	7,720
1933	1,534	1,119	5,512	8,165
	124	24	128	276
	1,658	1,143	5,640	8,441

INCREASE OF CAPACITY TO GENERATE POWER (1923-1933)

Year		Water power	Thermal power	Total
1923		1,307,706	755,079	2,062,785
		850,021	199,195	2,040,216
		2,157,727	954,274	3,112,001
1924		1,474,357	763,146	2,237,503
		1,021,963	250,332	1,272,295
		2,496,320	1,013,478	3,509,798
1925		1,813,508	954,633	2,768,141
		1,076,526	397,937	1,474,463
		2,890,034	1,352,570	4,242,604
1926		1,965,970	1,226,644	3,202,614
		1,426,611	222,438	1,649,049
		3,392,581	1,459,082	4,851,663
1927		2,111,087	1,356,044	3,467,131
		1,764,334	152,825	1,917,159
		3,875,421	1,508,869	5,384,290
1928		2,290,351	1,531,703	3,822,054
		1,693,270	146,882	1,840,152
		3,983,621	1,678,585	5,662,206
1929		2,581,949	1,611,674	4,193,623
		1,325,788	246,747	1,572,535
		3,907,737	1,858,421	5,766,158
1930		2,797,637	1,601,577	4,399,214
		1,385,454	275,466	1,660,920
		4,183,091	1,877,153	6,060,234
1931		3,056,936	1,599,588	4,656,524
		1,392,099	475,192	1,867,291
		4,449,035	2,074,780	6,523,815
1932		3,105,980	1,827,131	4,933,061
		1,426,310	439,069	1,865,379
		4,532,240	2,266,200	6,798,440
1933		3,168,705	1,912,037	5,080,742
		1,504,098	418,494	1,922,592
		4,672,803	2,330,531	7,003,334

The Industry in 1934

Trend in General Electric industry was recovering from depression with 1931 as its bottom. Towards the close of 1933, a plan to control electric power was completed and the

year 1934 derived benefit from it. Owing to great industrial activities as well as the control which came to show its efficiency, the declining tendency of power rates stopped in 1933, and in 1934 it took an upward turn. The control by the Government made

one step further in 1934, for it began to look over both generation and transmission of power. It succeeded in perfecting a plan of control over three principal districts of Kanto, Chubu and Kinki. On the other hand, electric power companies reopened works of constructing power houses, the continuation of which was suspended or postponed for some reasons, and increased capacities of the old plants to meet the increased demand, and the industry in 1934 displayed great activities.

Improvements in Conditions of Loans
The total loan of power companies amounted to ¥900,000,000, most of which were to mature between 1934 and 1936. With the adoption of open-end mortgage system, the interest rate has been reduced from 0.5 to 1 per cent. on average, and the big five companies succeeded in reducing interest rate for ¥550,000,000, so that if the total loan of all the power companies whose interest rate was reduced were taken into consideration, it would become a vast sum. On account of the comparatively firm tone of foreign exchange, foreign loans were also reduced through purchasing them.

With the improved monetary situation, shareholders of power companies became more lenient toward the latter, and many companies such as Nihon and Toho Power succeeded not only in increasing dividend, but also in extending capitalization. Ujigawa and Daido Electric Power are going to follow suit.

Business Result Business results of electric power companies showed great improvements, Nihon and Toho Electric Power increased dividend by 1 per cent., Tokyo Electric Light revived 4 per cent. dividend, and Daido and Ujigawa Electric Power are going to revive dividends. Power companies other than these are going to do the same, some having al-

ready succeeded in increasing capitalization.

Changes in 1934 New electric enterprises, new business opened, power stations completed, mergers, transfers, etc. in 1934 as investigated by the Communications Department follow:

1934	New enterprises	Business opened	New power stations	Mergers and transfers
Jan.	—	—	3	3
Feb.	—	1	3	2
March	—	—	4	4
Apr.	—	1	4	1
May	1	—	—	4
June	—	—	5	2
July	—	—	2	—
Aug.	—	—	3	—
Sept.	1	—	1	1
Oct.	1	—	1	5
Nov.	1	—	1	2
Dec.	2	—	2	6
Total	6	2	29	30

Electric Power Generated in 1934
Changes made in electric power generated classified according to principal districts follow:

CHANGES IN ELECTRIC POWER GENERATED

District	in k.w.h.	
	In 1933	In 1934
Mainland	14,077,054	15,446,967
Shikoku	357,639	432,251
Kyushu	2,425,426	2,508,443
Hokkaido	543,407	690,971
Total	17,403,526	19,078,632

Foreign Loans Foreign loans of the big five power companies stood in February at \$84,000,000 for Tokyo Light, \$10,825,000 for Toho Power, \$19,426,000 for Daido Power, \$7,568,000 for Nihon Power, and \$8,900,000 for Ujigawa Electric. Of these, holdings of Tokyo Light amounted to \$6,004,000, Toho Power \$4,835,000, Daido Power \$1,800,000, Nihon Power \$2,950,000, while the amount held by Ujigawa Electric is unknown. At the end of April, the Finance Department permitted the

purchase of foreign debentures for redemption to the amount of ¥22,300,000 (¥15,000,000 for Tokyo Electric, ¥3,000,000 for Toho Power, ¥2,500,000 for Ujigawa Electric, and ¥1,800,000 for Nihon Power) as an exception to Capital Flight Prevention Law. However, owing to the rise in value of the debenture bonds on account of low interest rate at home and inflation policy in America, little interest was shown for the purchase of the loans. Moreover, the power companies did not feel the necessity to do so on account of stability of exchange at about \$28 or \$29. The fact that these companies needed funds for development of new sources of power made them appropriate more money for those and the amount of foreign loans obtained in 1934 was small.

In reviving dividend of 4 per cent. in the latter term of 1934, Tokyo Light announced its inability to ad-

here to the gold clause in its indentures, which drew an attention. However, apart from the development of the question of gold clause in America, electric power companies resolved not to adhere to the gold clause. The foreign loans which once threatened the possibility of management of electric companies came to show that they no longer act as heavy burdens to the companies. They, therefore, came to take it wiser to appropriate funds in other directions than to make haste in redeeming the loans.

The Big Five

Five leading power companies, whose authorized and paid-up capitals, profits, etc. are given in the table below, supply electric current to 33% of the total number of lamps, besides 55% of the total other power. They practically dominate the electrical industry at present.

FORMATION OF CAPITAL, ETC. OF FIVE LEADING POWER COMPANIES AT THE END OF THE FIRST TERM, 1934

Companies	Head Office	(In ¥1,000)			
		Auth'd capital	Paid-up capital	Loans	Div'd
Tokyo Electric Light	Tokyo	429,562	429,562	369,434	—
Nihon Electric Power	Osaka	120,955	120,955	88,182	5%
Toho Electric Power	Tokyo	130,000	130,000	123,644	6%
Daido Electric	Tokyo	176,000	130,973	100,438	—
Ujigawa Electric power Co.	Osaka	92,500	92,500	86,494	—

Capitalization and Profits

The total authorized capital of different companies in 1933 amounted to ¥4,511,663,000 of which the paid-up capital was ¥3,494,202,000. Debenture and other loan accounted

for ¥2,301,268,000, while the total fixed capital was ¥5,194,702,000. The establishment of great power stations, and transmission of power for long distances were the chief causes of the increase of capital.

TABLE SHOWING INCREASE OF CAPITAL, DEBENTURE AND OTHER LOANS, 1922-1932

Years	Authorized capital	Paid-up capital	Fixed capital	Debenture and other loans
	yen	yen	yen	yen
1922	2,124,047,000	1,507,945,000	1,686,463,000	415,325,000
1927	3,524,199,000	2,677,153,000	3,667,387,000	1,506,040,000
1932	4,174,738,000	3,325,534,000	4,888,175,000	2,494,049,000
1933	4,511,663,000	3,454,202,000	5,194,702,000	2,306,268,000

The rate of profit earned is as shown in the following table:

PROFITS OF ELECTRIC INDUSTRY 1922-1932

Year	Paid-up capital	Profit	Rate of profit against paid-up capital
	yen	yen	yen
1922	1,507,949,000	188,295,000	12.0%
1923	1,703,195,000	192,212,000	11.0
1924	2,012,205,000	217,249,000	11.0
1925	2,218,649,000	252,977,000	11.0
1926	2,453,538,000	279,331,000	11.0
1927	2,677,153,000	279,541,000	10.5
1928	2,868,717,000	282,880,000	10.0
1929	3,019,222,000	301,900,000	10.0
1930	3,180,810,000	255,800,000	8.0
1931	3,234,181,000	227,061,830	7.0
1932	3,325,534,000	195,997,000	5.9
1933	3,494,202,000	183,100,000	5.2

Gas Industry

Introduction

When compared with the electric industry, the gas industry has been very slow in its development. The introduction of gas took place in 1885, when it was used in Yokohama for street lighting purposes. Later

in the same year Tokyo adopted it for the same purpose. The capital invested in 1885 was ¥54,000, and a slow but steady increase took place until 1925, when the invested capital stood at ¥276,373,000. After that year the industry made great strides as the following figures show:

End of	Material Consumed	Supply	No. of Consumers	Consumption		Motors	
	Coal	Output		No. of Lights and Burners	Number		Horse-power
	Metric ton	Thousand cubic metres	Amount Supplied to Consumers Thousand cubic metres				
1917	658,530	226,209	229,501	549,565	2,455,241	1,703	531,885
1918	735,161	259,892	261,371	505,401	2,364,394	1,531	414,815
1919	718,574	277,096	275,212	530,061	2,182,307	1,469	13,141
1920	727,705	293,414	294,544	492,214	2,195,732	1,184	11,455
1921	718,271	305,666	305,470	502,828	2,234,623	966	9,938
1922	761,262	345,240	347,261	552,367	2,358,674	867	9,415
1923	707,226	329,017	326,517	463,746	798,032	699	7,058
1924	727,314	353,266	352,932	568,477	1,606,096	550	6,616
		* 37,288					
1925	781,911	354,362	408,418	683,087	1,865,183	497	6,648
		* 36,605					
1926	904,087	444,890	423,932	795,226	2,043,829	429	6,638
		* 42,580					
1927	1,036,552	496,810	486,911	953,688	2,234,722	358	6,524
		* 68,096					
1928	1,191,007	576,140	578,493	1,212,024	2,623,257	308	6,162
		* 88,884					
1929	1,343,137	639,972	653,837	1,462,221	3,057,487	265	6,023
		* 88,566					
1930	1,305,297	668,329	700,249	1,622,982	3,438,194	224	4,712
		* 103,088					
1931	1,329,869	691,222	740,081	1,716,662	3,704,090	193	3,307
		* 89,742					
1932	1,283,216	734,188	712,717	1,785,205	3,921,620	186	3,237
1933	1,402,000	770,447	709,967	1,866,000	4,145,000	—	—

Note: * Aqueous Gas.

Present State of the Business

General Aspects The difficulty of disposition of by-products which was a stumbling-block to the development of the gas industry disappeared along with activities in heavy and chemical industries, and the industry's policy to increase demand through lowering the price of gas came to reap its fruits. In fact, the gas industry may be said to be developing with the prosperity in cities which is caused through inflation. On the other hand, the higher prices of coal and steel are making both production and construction costs higher.

Demand on Gas The demand for gas is making a steady increase every year. Working results of five large companies in 1933 and 1934 were as follows:

PRODUCTION OR SALES OF GAS BY FIVE LEADING COMPANIES

Name of Co.	(In 1,000 cu.m.)		Percentage of increase in 1934
	1933	1934	
Tokyo Gas	402,248	415,500	4.3%
Toho ..	35,970	36,421	1.3%
Kyoto ..	39,354	40,522	3.0%
Osaka ..	115,243	133,235	15.6%
Kobe ..	40,255	48,715	8.6%
Total	633,070	669,397	5.7%

Figures show 5.7 per cent. increase over 1933. The abrupt increase in Osaka and Kobe in 1934 is due to ordinary increase in number of consumers as well as to the damages caused by the typhoon of that year. Owing to improvements in various gas appliances, gas is now used in a very economic way so that the consumption of gas per meter is decreasing. The increase in demand is therefore solely due to increase in number of consumers.

Higher Cost of Production The biggest problem for gas producers in 1934 was the higher prices of coal

and steel, the former having relations with the cost of gas production and the latter with expansion of the industry. The price of coal rose from ¥8.10 per ton in 1932 to ¥12.32 in 1934. As the contract for the purchase of coal runs generally a year, the result of the purchase generally appears in the following year. From the above figures, therefore, the production cost of gas in 1935 will be about 50 per cent. higher than that for 1933, and the price of coal has now become a subject of great importance to the gas industry.

Fortunately the prices of coke and other by-products rose owing to increased demand on these from heavy and chemical industries, and this enabled producers to make good in 1934 the disadvantages caused by the higher price of coal. However, the income from gas which occupies about 70 to 80 per cent. of the total income is fixed and cannot be increased under the present system. Though the increase in the price of coal may also increase the price of the by-products, whether the latter can cover in 1935 the loss caused by the former remains still to be seen.

The average price of bar steel in 1932 was ¥67, which went up to ¥96 in 1933, and to ¥100 in 1934. The burden which came from the higher price of steel materials was not as serious as that of coal. Especially as this came about after most of the producers had completed new expansion works, the degree of pressure which it brought to bear upon the business of producers was comparatively small.

Industry in 1933 According to figures published in 1934, the number of gas enterprises in 1933 was 102 opened and 14 unopened. As compared with the previous year, the number opened increased by 2 while the number unopened decreased by 1.

95 of the opened are private enterprises while 7 are the city-managed. Again, 87 of them are exclusively engaged in gas while those jointly engaged with electric industry numbered 15, of which 10 were of private, 1 the city-managed and 4 managing with various kinds of enterprises. The formation of capital of the industry in 1933 and 1934 is as

shown below. The reason that the capital increased in 1934 was due to establishment of new companies and payment of unpaid capital. In the capitalization columns the investment in the electric enterprises is included and the real capital invested in purely gas industry is estimated to run from ¥273,000,000 to ¥280,000,000.

BUSINESS RESULTS OF GAS COMPANIES

(In ¥1,000)

March	Paid-up Capital	Fixed Capital	Profit	Percentage of profit against Fixed Capital	Dividend rate
1930	350,232	459,686	48,874	9.2%	9.6%
1931	382,930	555,614	50,896	9.0	8.7
1932	395,632	571,564	51,452	8.7	8.3
1933	400,908	580,053	50,317	9.1	8.0
1934	419,096	584,323	53,029	9.1	7.8

Warehousing

History

Since warehousing depends on the storing of large quantities of goods, transportation facilities are the factors which influence its success, an expansion of one calls for an expansion of the other and, in Japan, it was the development of transport facilities in the days of Meiji which gave rise to the modern warehousing business.

Warehouses of kinds have always existed. Emperors in olden times kept rice and cereals in warehouses for military purposes. Later, cereals were kept to provide for relief of the people in case of poor crops, but in either case, the warehouses were used for military or political, not commercial, purposes. When the Tokugawas came to rule the country as Shoguns about three hundred years ago, both Yedo (present Tokyo) and Osaka became great cities where trade and commerce flourished. Transportation by sea developed, and many feudal lords came to reside

in these cities, bringing with them, or having sent to them, the agricultural products of their country districts. The produce was stored at the lords' residences, which became, in a sense, public warehouses. The produce was sold by public tender and to the successful bidder a memorandum was given against receipt of payment in cash. This memorandum was equivalent to the warehouse receipt of the present day, and the holder of the memorandum was authorized to keep his cereals in the warehouse for the time stipulated on it. Loans were often raised with memoranda as collaterals.

After the Restoration, owing to development of commerce and activity in the movement of goods, many warehouse businesses were started, the first company, to operate on a modern basis being the Soko Kaisha in Fukagawa, Tokyo, established in 1881 with a capital of ¥65,000. Dissolution took place 3 years later. In Osaka, the Konoike family organized the Osaka Soko

Kaisha with a capital of ¥200,000 in 1882. In 1883, the Sanbashi Kaisha in Kobe, and in 1884, the Otsu Soko Kaisha in Otsu in Miyé prefecture, were established. In 1886, the Tokyo Soko Kaisha, Ltd., was founded by the Iwasaki family. After that year there was no great change until after the Sino-Japanese War, when, with increased foreign trade and improved transportation facilities by land and sea, the number of warehouse companies rapidly increased. In 1906, there were 536 people engaged in the warehouse business, either on private account or on an incorporated basis.

Present State of the Business

The Area At the end of 1934 the number of warehouse managements which belong to the Japan Warehouse Association and which are located in principal cities is 107, and the total area covered by them is

about 189,000 tsubo, with the commodities valued at ¥661,809,000. However, there are many warehouse managements, incorporated or otherwise, which do not belong to the Association. According to an investigation made by the Department of Commerce and Industry, the number of warehouse managements in the country totalled 578 in 1933, which owned 4,934 warehouses covering an area of 681,966 tsubo, besides renting 1,310 warehouses, the area of which totalled 136,012 tsubo. These warehouses are of various types, some of them being of reinforced concrete, some of brick or stone, some of iron frame and tin plates, some of storehouse type, while others are merely zinc sheet covered or of wood.

Value of Commodities The values of commodities stored in the 107 warehouses above mentioned were as follows:

VALUE OF BALANCE OF STOCKS IN WAREHOUSES

(unit ¥ 1,000)

	1921	1931	1932	1933	1934
Balance at the beginning of the year	855,260	356,844	409,988	485,987	585,085
Balance at the end of June	545,471	458,917	546,683	629,965	775,846
Increase or decrease during the half-year	*309,789	102,073	145,690	143,978	190,761

* Decrease

The figures for 1921 are given here to show that the stocks accumulated after the great slump in 1920 have been cleared away. Scarcely any stocks are kept for the purpose of speculation. When studied in con-

junction with the following table the decrease in value indicates that not only has the quantity of goods decreased, but the price level in general is lower.

BALANCE OF STOCKS IN WAREHOUSES IN NUMBER OF PARCELS

(unit 1,000 pieces)

	1921	1931	1932	1933	1934
Balance at the beginning of the year	23,125	21,270	22,299	35,509	28,892
Balance at the end of June	28,901	22,113	24,866	20,509	40,208
Increase or decrease in June over Jan.	5,776	843	2,567	(-)13,969	11,316

Stocks of various commodities warehoused as from November of 1933 until March, 1935, and the value of parcels warehoused in leading cities follow:

STOCKS OF VARIOUS COMMODITIES WAREHOUSED

(In ¥1,000,000)

Commodities	Nov., 1933	Dec.	Jan., 1934	Feb.	Mar.	Apr.	May	June	July
Rice	67.0	122.3	181.0	212.3	235.2	242.9	239.0	228.7	238.7
Other cereals	8.6	9.5	9.8	9.6	8.6	8.0	7.3	6.7	7.4
Sugar	51.5	39.5	35.4	49.6	75.6	82.3	77.6	68.3	60.0
Foodstuff	18.8	18.1	15.1	13.0	12.1	12.6	14.8	15.9	17.2
Cocoons	20.6	18.2	15.3	13.1	9.4	6.2	3.1	9.9	8.9
Cotton	62.1	68.1	70.9	70.7	73.5	80.5	93.0	101.9	107.3
Wools, etc.	33.3	43.9	51.6	59.6	68.4	80.9	86.7	82.3	72.3
Yarns	116.4	123.3	129.2	128.2	126.9	127.6	122.5	121.4	122.5
Textiles and manufactures thereof	37.6	44.2	44.4	41.7	38.6	37.2	35.5	40.4	45.1
Papers and raw materials	24.0	22.2	22.1	22.0	21.2	22.7	22.1	22.6	22.9
Fertilizers	8.4	7.6	7.7	7.7	72.3	7.2	5.8	6.8	7.2
Iron and metal manufactures	26.9	27.4	27.3	28.8	29.5	30.0	28.1	25.0	23.3
Medicine, dyestuffs, oils and tallow	14.1	13.7	13.5	12.9	13.3	13.2	12.7	14.3	13.9
Others	26.9	26.5	27.9	26.9	26.4	26.2	28.5	30.3	31.3
Total	516.7	585.0	632.0	696.8	746.6	777.0	777.3	775.8	778.8

Commodities	Aug.	Sept.	Oct.	Nov.	Dec.	Jan., 1935	Feb.	Mar.
Rice	226.3	204.5	192.2	182.0	198.2	214.7	222.7	225.5
Other cereals	10.3	10.7	11.7	12.3	15.3	16.0	16.8	16.8
Sugar	46.9	38.4	27.4	17.1	12.4	19.4	36.6	61.5
Foodstuff	24.1	30.4	32.7	31.5	30.7	26.2	23.2	20.5
Cocoons	8.1	7.7	11.5	10.7	9.6	8.3	6.5	4.5
Cotton	118.7	114.4	97.3	74.7	82.7	107.1	128.5	133.8
Wools, etc.	58.8	44.4	37.1	37.8	35.1	37.1	37.1	32.9
Yarns	119.4	115.1	111.3	114.2	115.8	110.0	106.6	105.8
Textiles and manufactures thereof	41.0	38.0	37.6	40.9	45.1	43.4	40.7	41.4
Papers and raw materials	24.2	25.0	25.3	24.8	25.5	25.8	25.8	27.1
Fertilizers	7.8	7.9	6.9	6.9	6.6	7.7	6.9	6.7
Iron and metal manufactures	23.9	23.7	24.5	26.8	32.6	34.9	36.9	32.1
Medicine, dyestuffs, oils and tallow	13.8	14.1	11.6	11.2	12.9	13.1	13.3	13.7
Others	35.7	37.1	36.6	39.2	38.7	39.1	38.7	48.0
Total	757.3	712.1	664.5	630.8	661.8	703.5	741.2	770.8

WAREHOUSED COMMODITIES (Japan Warehouse Ass'n)

Date	All Japan (a)		Six leading cities (b)					
	No. of Parcels (in 1,000)	Value (in 1,000 yen)	Number of Parcels (in 1,000)	Receipts	Withdrawals	Balance	Receipts	Withdrawals
1933 Nov.	22,905	516,767	3,745	4,893	17,131	164,050	173,567	458,221
" Dec.	28,893	585,086	8,852	4,884	21,013	208,639	158,346	506,874
1934 Jan.	34,706	652,066	8,515	5,147	24,381	214,741	168,146	553,466
" Feb.	38,603	696,817	7,893	5,353	26,917	205,121	171,361	587,226
" Mar.	42,361	746,637	7,478	4,537	29,858	209,017	168,384	627,859
" Apr.	43,582	777,085	5,794	4,588	31,065	180,183	151,672	656,370

Date	All Japan (a)		Six leading cities (b)					
	No. of Parcels (in 1,000)	Value (in 1,000 yen)	Number of Re- ceipts	With- drawals	Value (in 1,000) Balance	Re- ceipts	With- drawals	Value (in 1,000 yen) Balance
.. May	42,425	777,376	4,555	5,297	30,323	173,634	168,586	661,479
.. June	30,205	775,847	3,817	4,562	29,579	161,292	156,675	666,008
.. Jul.	38,979	778,819	4,493	4,947	29,115	178,934	171,053	673,887
.. Aug.	37,503	757,334	4,275	5,172	28,218	171,414	191,206	654,095
.. Sept.	35,332	712,122	3,636	5,033	26,821	142,421	178,770	617,745
.. Oct.	32,036	664,519	4,059	7,270	23,611	171,918	216,981	572,682
.. Nov.	30,850	630,889	4,159	5,588	22,182	147,541	182,246	537,977
.. Dec.	33,017	661,809	6,305	5,364	23,123	197,495	175,287	560,235
1935 Jan.	34,534	703,536	5,815	4,892	24,046	196,950	161,642	595,543
.. Feb.	36,288	741,293	6,827	4,798	25,576	198,341	162,856	631,028
.. Mar.	38,273	770,837	6,652	5,423	26,906	211,402	185,669	656,760

(a) 108 storage plants in Mar. '35. (b) 42 storage plants in Tokyo, Osaka, Kobe, Yokohama, Shimonoseki-Moji and Nagoya. Figures for July, 1933, and thereafter include those for Nagoya.

Insurance All warehoused goods are insured against fire. At present, the custom in Japan is that the warehouse companies become, on their own account, insurers of the goods for the customers, who, therefore, get the benefits of insurance without going to the trouble of insuring them themselves, a custom which differs from that in Europe and America. According to the Japanese system, therefore, when the warehouse companies issue warehouse receipts, they are required by law to insert the fire insurance clause in the receipts. Accordingly, transactions made through warehouse receipts will also settle questions connected with fire insurance, a system not followed in Europe and America.

Without the insurance system it would have been next to impossible to give such adequate statistics as are contained in the above tables, which are the balances of outgoing and incoming goods as entered in the account books of the above-mentioned 96 warehouses and published as totals by the Association of Japanese Warehouse Companies.

Storage Charges Storage charges are calculated on a combined ad valorem and weight basis. There-

fore, when the price of an article declines, the storage charge declines also. Different ad valorem rates exist for different classes of goods and the same is true of the charges by weight, the extent of responsibility of the warehouse company and the importance of any particular goods to the public at large being taken into consideration. For instance, rice is a necessity of life for the Japanese, so the rate is very low. For weight or measurement goods are divided into 60 classes.

Characteristics of the Business

In Japan, there are numerous warehouses called "producers' warehouses." Actually, such warehouses are agricultural produce storehouses, places where seasonal commodities can be collected and stored until the market can absorb them at fair prices. The farmers are thus protected and assistance can be rendered them through the arrangement of credits, a duty undertaken by the warehouses. Besides protecting farmers from severe economic competition the warehouses are valuable nationally for promoting the policy of self-support and sufficiency in foodstuffs. Rice and cocoons are the chief commodities handled.

Warehouse Business in 1934

Owing to great industrial activities, movement of commodities by railways was very brisk, which was also reflected in receipt and forwarding of commodities by warehouse companies. According to an investigation made by Japan Warehouse Association, the receipt and

forwarding of commodities by warehouse companies in six leading cities in 1934 showed 14 per cent. increase in units in receipts as compared with 1933 (value decreased by 1 per cent.), while outgoing commodities increased 17 per cent. (value decreased by 0.2 per cent.). The following table shows the conditions of business:

AMOUNT OF COMMODITIES WHICH WERE RECEIVED AND FORWARDED BY WAREHOUSE COMPANIES IN SIX LEADING CITIES

(In 1,000 units and ¥1,000,000)

Year	No. of units		Value	
	Warehoused	Forwarded	Warehoused	Forwarded
1933	57,025	53,751	2,176	2,105
1934	64,970	62,863	2,154	2,100
Increase or decrease	13.9%	17.0%	(-1.0%)	(-0.2%)

Chief Warehouse Companies

Companies	Year established	Authorized capital	Paid-up capital	Places where warehouses are located	Head office
Mitsubishi Warehouse Co., Ltd.	1886	10,000,000	10,000,000	Tokyo, Yokohama, Kobe, Osaka and Moji	Tokyo
Toshin Warehouse Co., Ltd.	1909	15,000,000	12,500,000	Tokyo, Yokohama, Nagoya, Osaka, Kobe & Moji	"
Sumitomo Warehouse Co., Ltd.	1925	15,000,000	15,000,000	Osaka, Kobe and Tokyo	Osaka
Toyo Warehouse Co., Ltd.	1925	6,000,000	3,500,000	Nagoya, Toyohashi, Ichinomiya and Tsushima, all of which are in Aichi prefecture	Nagoya
Teikoku Zanshi Soko Co., Ltd.	1926	3,000,000	750,000	Yokohama	Yokohama
Shibusawa Warehouse Co., Ltd.	1909	2,000,000	2,000,000	Tokyo, Otaru and Moji	Tokyo
Koa Kogyo Co., Ltd.	1919	10,000,000	5,000,000	Tokyo and Yokohama	Tokyo
Tokyo Warehouse Co., Ltd.	1904	750,000	625,000	Tokyo	Tokyo
Teikoku Soko Unyu Co., Ltd.	1907	2,000,000	2,000,000	Tokyo	Tokyo
Yokohama Warehouse Co., Ltd.	1906	3,800,000	1,748,000	Yokohama	Yokohama
Naniwa Warehouse Co., Ltd.	1931	3,000,000	3,000,000	Osaka, Yokohama, Kobe and Shimonoseki.	Osaka

CHAPTER XXI

FOODSTUFFS

Wheat Flour

Historical Survey

Before the Russo-Japanese War it was not until after the Russo-Japanese War (1904-5) that the wheat flour industry made any progress in Japan. Prior to the war there was a fairly large consumption, but manufacturing was only in the infant stage, most of the production being with the help of water-wheels. The daily output by this method was only 10 to 50 or 60 bags; the quality was poor and not uniform and, being packed in straw bags, the product was not at all satisfactory. It was only in the year 1895 that wheat flour was first produced on a modern basis by machinery. In that year, the Nippon Seifun Kaisha, Ltd., began to operate mills with a capacity of 200 koku per day, and gradually, mills with capacities of 50 to 100 koku a day were established, but progress was very slow. However, the demand for flour increased and as production could not keep pace with it imports naturally increased. In 1895, imports were 280,000 bags, valued at ¥400,000, ten years later imports had increased to 4,990,000 bags, valued at ¥9,950,000. Imported and water-mill produced domestic flour together satisfied practically the whole of home consumption, while domestic flour made by machinery formed but a very small part of the supply. The imported flour coming chiefly from the United States of America, was of a far superior quality to the home product.

Yield of Wheat Before 1901, the land used for wheat planting averaged between 440,000 and 480,000 cho, and in 1905, it was 450,000 cho. The yield of wheat gradually increased up to 1901, when it was 4,370,000 koku, but during the next few years there was a gradual decrease until in 1905 the yield was 3,600,000 koku.

As regards imported wheat, the amount imported usually depended upon the domestic wheat crops, but showed in general a gradual increase. In 1895 imports were only 1,600 koku with a value of ¥7,500. In 1902 they had increased to 38,000 koku, valued at ¥240,000. The year 1903 proved to be a lean year for domestic wheat, and imports suddenly increased to 560,000 koku, of a value of ¥4,760,000. After that, owing to the prosperity which visited Japan after the war with Russia, wheat continued to be imported in large quantities. In 1904 it was 170,000 koku, valued at ¥1,530,000, and in 1905, 450,000 koku, valued at ¥4,000,000.

After the Russo-Japanese War many flour mills were established on a modern basis during the time of the great boom which followed the Russo-Japanese War, and production capacity was greatly expanded, but a contraction was brought about by the closing down of many of the newly established mills when the reaction later set in. In 1914, when the World War started the capacity of production by machinery was 9,060 barrels and this, by 1922, had increased to over 20,000 barrels.

During those seven years the industry experienced unprecedented prosperity, and with this development on modern lines, domestic producers who make flour in the old-fashioned way have lost nearly all their customers and, further, imported flour has been practically shut out of the country.

The Industry at Present

Production and Imports of Wheat After 1918 the demand for wheat flour, keeping pace with the advance in the standard of living, greatly increased. The extended westernization of the country in recent years largely accounts for this and has brought about a consequent heavy demand for wheat. Home production has not increased to meet the demand, the result being, as the following tables show, heavy annual importations of wheat. An attempt,

therefore, has been made by the Government to increase domestic production through tariff and increase of wheat acreage, in which they were highly successful. The production increased very much in 1933 in proportion to the increased acreage, which was further accelerated in 1934, as the following table shows:

PRODUCTION OF DOMESTIC WHEAT AND ITS ACREAGE AFTER 1924

Year	Production koku	Acreage cho
1924	5,268,000	469,000
1925	6,121,000	468,000
1926	5,897,000	467,000
1927	6,059,000	473,000
1928	6,389,000	489,000
1929	6,323,000	494,000
1930	6,124,000	491,000
1931	6,405,000	501,000
1932	6,497,000	508,000
1933	8,018,000	616,000
1934	9,450,700	648,400

QUANTITIES OF WHEAT IMPORTED

Countries from which imported

Year	(Quantities in piculs)						Total
	China	Kwantung Peninsula	U.S.A.	Canada	Australia	Others	
1924	21,567	6,126	4,566,850	2,194,354	4,900,557	—	11,689,454
1925	8,406	8,478	2,839,678	1,518,904	3,854,246	2,208	7,727,044
1926	—	—	3,257,855	4,177,400	4,269,521	11,563	11,716,549
1927	261,959	62,958	2,608,611	2,879,710	1,953,867	6,973	7,774,088
1928	224,974	440,452	2,439,587	6,649,680	2,402,582	74,282	12,231,517
1929	224,974	440,452	2,439,587	6,649,680	2,402,582	74,282	12,231,517
1930	204	34	3,308,999	2,957,510	1,706,306	22	8,063,078
1931	23	0	884,210	2,597,625	8,554,294	3,370	12,039,531
1932	—	0	195,634	1,983,110	10,264,635	54	12,443,434
1933	—	0	49,367	1,874,606	6,593,331	3,165	8,520,470
1934	17,820	0	2,220,803	1,325,549	4,455,025	135,864	8,155,061

The United States anticipated a crop failure in 1934, which was undoubtedly a bullish factor for the wheat market. Moreover, President Roosevelt's efforts to bring back prosperity had a good effect on wheat price. But the stock of wheat was so large that it still acted to check the rise of price. Accordingly the United States made an agreement

with China to sell wheat and cotton, which was not, however, carried into effect on account of anxiety felt as to the payment. Thereupon, the United States sold the wheat in Japan. The quantity so dumped totalled about 100,000 tons, the shipments of which arrived toward the end of May and thereafter. Owing to great increase of domestic produc-

tion of wheat, the import of wheat from countries other than the United States decreased to a considerable extent.

The Export of Wheat Flour The export of wheat flour in 1917 was as large as 4,410,000 bags, and 2,560,000

bags in 1918, but this was only a temporary war-time phenomenon. After the latter year exports fell away sharply and it was not until 1925 that exporting on a steady basis really began.

EXPORTS OF WHEAT FLOUR

Countries to which exported

(Quantities in piculs)

Year	Manchoukuo	China	Kwantung Province	Dutch Indies	Asiatic Russia	Others	Total
1923	—	—	—	—	10,480	163,020	173,500
1924	—	79,903	6,875	3,833	30,155	12,875	187,641
1925	—	405,841	518,299	8,403	10,102	206,158	1,149,803
1926	—	907,565	653,947	48,536	4,413	78,111	1,692,572
1927	—	938,934	200,234	30,156	7,250	75,113	1,251,687
1928	—	1,763,898	536,245	24,538	23,647	24,001	2,372,329
1929	—	1,736,850	1,086,880	16,571	153,068	19,979	3,063,378
1930	—	1,337,437	378,057	21,595	229,625	32,044	1,998,758
1931	—	1,684,775	490,162	14,068	19,390	33,616	2,252,011
1932	858,103	1,049,163	2,572,327	5,998	—	27,395	3,604,886
1933	1,427,036	482,700	803,963	14,068	—	63,006	5,804,249
1934	1,402,032	17,133	2,899,619	8,988	31,081	68,320	4,427,819

Exports in 1932 showed the highest figure up to that time, exceeding the figure of 1931 by 1,443,000 piculs. The Tsurumi Mill of the Nisshin Seifun Kaisha, Ltd., the largest mill in the Orient, was destroyed by fire in 1931. In 1933, aided by the fall in yen exchange and the Tsurumi

Mill again coming into operation, the year showed even better results than 1932. In 1934, however, the figure showed a slight decline owing to the sales by the Australian exporters at Dairen, which checked the export of Japanese flour to Manchoukuo and Kwantung Peninsula.

FLOUR PRODUCTION, CONSUMPTION, ETC.

(in bags)

Year	Production	Import	Export	Home Consumption and in stock
1923	30,098,000	921,000	470,000	30,500,000
1924	32,676,000	392,000	508,000	32,560,000
1925	35,433,000	205,000	3,101,000	33,588,000
1926	33,349,000	338,000	4,551,000	34,216,000
1927	36,701,000	897,000	3,879,000	34,220,000
1928	42,478,000	374,000	6,433,000	36,420,000
1929	43,159,000	314,000	3,271,000	35,203,000
1930	40,962,000	577,000	5,396,000	36,443,000
1931	42,058,000	258,000	6,080,000	36,236,000
1932	41,939,000	112,000	9,976,000	32,125,000
1933	41,895,892	40,246	14,321,472	26,114,666
1934	—	45,400	11,966,000	—

Wheat Encouragement Policy

The great development of flour milling industry and the shortage of domestic supply of wheat increased the import of foreign wheat to a tremendous extent. For a long time it was studied to check the import of wheat. It was proposed later that to attain the purpose, the best way would be to increase domestic production through increase in wheat acreage, with the goal of making Japan self-sufficient as to the supply of wheat. With this in view, when tariffs were revised in general in 1932, that on wheat was raised from ¥1.50 to ¥2.50 and that on flour from ¥2.90 to ¥4.30 per 100 kin each. Moreover, it was estimated by the Ministry of Agriculture and Forestry that Japan's annual requirement of wheat was about 9,000,000 koku, 5,000,000 koku of which was used as flour while balance of 4,000,000 koku for brewing and other purposes. The Government, therefore, determined to increase wheat production to this figure. They encouraged rice farmers in 1932 to turn over their land to wheat production, figuring on a five year drive, and the Government's goal was reached in three years instead of five. Wheat crop amounted in 1934 to 9,450,000 koku against 8,006,000 koku of 1933, and showed an increase of 41.6 per cent. over the average of preceding five years. The acreage was 648,400 cho against 615,888 of 1933. Its increase over the average of preceding years was 24.4 per cent. The fact that tariff was raised and Japan has become self-sufficient in wheat gives a new advantage to Japan. In the past, Japan had to buy most of wheat in foreign markets. Prices always were subject to fluctuations according to conditions in foreign markets, and it was not always convenient to hedge pur-

chase made in this country. In fact, for many years the business of flour milling was handled as if it were a speculation and the near-failure of the Nihon Flour Company, Ltd. (in the days before the Mitsui Bussan Kaisha, Ltd. assumed control of it) was entirely due to gambling in wheat. Now this danger of speculation has been entirely wiped away from the business. Domestic wheat, most of time, is well within the tariff walls, and is not very much affected by foreign influences now.

1934 Business

Trend in General The flour industry passed a prosperous year in 1934. Due to general anticipation of crop failure the price of wheat was high the world over, along which the price of flour also. On the other hand, owing to the higher price of rice, the domestic demand on flour was good, while in the latter half of the year the export to Manchoukuo and Kwantung Peninsula increased. The increase in demand resulted in the increase of wheat production and flour mills made a good business.

Wheat Market Owing to the short crop of wheat the world over, quotation at Chicago market was strong, which was reflected in the domestic market. Though the price declined temporarily during the spring due to the sales of wheat by America, the market soon picked up and the price was firm in general.

Production and Consumption Production of flour gradually increased throughout the year, and in the latter part of the year, over 3,000,000 bags a month was produced. Owing to record making increase of export in the period, mills operated at full capacity. The causes of these increases are not far to seek. The demand on flour increased due to the higher price of rice, and export expanded in the latter half of the

year. As the result of this, the stock of flour which was more than 100,000 bags was at the beginning of the year reduced to about 50,000 bags. The total production in 1934 is estimated at 45,966,000 bags.

Though the price of wheat was high next to 1933, flour mills were able to make profit on account of increased demand and higher price obtained for flour. The average wholesale price of wheat flour per bag (5.9 kwan) both in Tokyo and in the whole country was ¥3.28 against ¥3.50 of 1933.

Decrease in Export Manchoukuo and Kwantung Peninsula are two principal markets for Japanese wheat flour. Owing to the sales by Australian millers at Dairen, which amounted to from 1,000,000 to 1,500,000 bags a month, export by the domestic mills to these markets were curtailed by that much. The Japanese millers cannot compete against foreign flour if the domestic wheat is used as raw material. They, therefore, store the imported flour in bond and use it as raw material

for export purpose. On account of the higher price of foreign wheat in earlier period, this was impossible to do and hence the decrease in export.

However, in the latter half of the year, the Australian sales at Dairen were over, while the shipment of American wheat arrived, and the domestic mills recovered what they lost in the first half by milling these low-priced American wheat and exporting it. With the export of 29,000,000 kin in July as the bottom, export steadily gained, that in December amounting to as large as 59,000,000 kin. The total export during the latter half amounted to 260,000,000 kin and showed a gain of 20,000,000 kin as compared with the corresponding period of the year before. But owing to the severity of competition of the Australian exporters at the earlier period, the total export to these markets in the whole year was 440,000,000 kin which showed a decrease of 87,000,000 kin.

Sugar

History and Development

The art of making sugar was imported from China about two hundred years ago, but no great progress is recorded in its manufacture until after the Restoration, and even then it remained as a farmers' sideline until the end of the Sino-Japanese War of 1894-5, when Formosa, well-known for its sugar production, was ceded to Japan by China. This marked a new era in the sugar industry. In 1896, a sugar refining company was organized in Osaka and from that time the industry began to develop.

The Government undertook to levy a duty on raw sugar in 1899, and, by successive steps, this duty has reached the present rate. In 1911, a tariff of a similar nature was imposed, for the first time, on refined sugar.

In view of the fact that Formosa is ideal both in temperature and rainfall for cane growing the Government decided to encourage the establishment of sugar mills in the Island. With this in view it established the Temporary Sugar Bureau as a branch of the Government of Formosa. The Bureau subsidized sugar companies in establishing sugar mills and pur-

chasing required machinery. It imported cane seedlings and distributed them to cane growers. It gave, too, subsidies for the purchase of fertilizers, and in various other ways succeeded in dispensing as subsidies, up to 1924, a sum amounting to more than thirteen million yen. As the result of these subsidies, the industry has developed to the present stage. In 1902, the production of raw sugar in Formosa was only about 600,000 piculs, but by 1931 this had increased to over 13,000,000 piculs.

In 1901, the Taiwan Sugar Co., Ltd., was organized. Raw sugar mills with all new machines were established and war was declared against the old-fashioned machines which

were only able to produce poor red sugar. Development was destined to be slow, for the plantations and mills were subject to attacks from the native savages, but this difficulty was gradually overcome and during the prosperity that visited Japan after the Russo-Japanese War, many new companies were organized and the industry developed rapidly.

Present State of the Industry

The sugar industry in Shikoku, Kyushu, and the Loochoo Islands is making no headway, but that in Formosa, is rapidly progressing, and at present it is the Formosan sugar that controls the sugar market in Japan. Refining is making good progress in Japan proper.

PRODUCTION OF SUGAR

(Unit 1,000 piculs)

Year	Formosa	Japan Proper	Hokkaido	Korea	South Sea Islands	Total
1918-1919	4,863	1,472	—	—	—	6,335
1919-1920	3,720	1,164	—	—	7	4,892
1920-1921	4,212	1,578	4	15	19	5,830
1921-1922	5,877	1,259	74	15	3	7,230
1922-1923	5,923	1,169	108	10	21	7,232
1923-1924	7,536	1,387	225	6	58	9,213
1924-1925	7,992	1,201	167	6	148	9,516
1925-1926	8,332	1,399	190	9	152	10,083
1926-1927	6,852	1,299	236	5	209	8,653
1927-1928	9,667	1,438	343	9	181	11,640
1928-1929	13,155	1,523	343	10	164	15,197
1929-1930	13,508	1,222	424	11	345	15,511
1930-1931	13,287	1,273	361	15	642	15,580
1931-1932	16,484	1,651	405	29	696	19,266
1932-1933	10,561	1,712	402	—	729	13,406
1933-1934*	10,771	1,609	383	—	699	13,463

* Estimate

Before 1926, the total production of sugar was only about 10,000,000 piculs. But after that year production rapidly increased, and in 1933-34, it had reached over 18,032,000 piculs, about twice as much as six or seven years ago. The increase came chiefly from Formosa, and is due to the advance in agricultural

method, viz., the planting of superior canes, prolongation of the time of planting, improvements in ploughing, etc. As the result of this increase in yield, imports of sugar have been considerably reduced, but the balance between demand and supply has been destroyed which became the cause of anxiety for sugar

industry. However, owing to restrictions placed on the output of sugar not only in Japan proper, but also in Formosa and the South Sea Mandated Islands, the output was curtailed. Moreover, import was reduced considerably so that the balance be-

tween the demand and supply was restored, and the industry was quiet until 1934. It is feared, however, that the 1934-1935 production, which is estimated as large as 18,880,000 piculs may nullify all these efforts in the past.

TABLE SHOWING CONSUMPTION OF SUGAR

(Unit 1,000 piculs)

Year	Japan Proper	Formosa	Korea	South Sea Islands	Total
1918	7,875	410	—	—	7,755
1919	8,148	302	170	—	8,621
1920	6,722	235	149	7	7,114
1921	10,199	326	291	19	10,837
1922	11,230	317	175	3	11,777
1923	10,562	363	276	21	11,223
1924	11,162	351	209	58	11,781
1925	11,690	320	262	148	12,621
1926	12,674	551	315	152	13,694
1927	12,093	519	402	209	13,225
1928	13,035	651	322	181	14,191
1929	13,596	622	432	164	14,815
1930	12,949	688	340	313	14,292
1931	13,461	662	333	1	14,459
1932	14,310	671	350	1	15,332
1933	13,936	684	350	1	14,971
1934 (estimate)	—	—	—	—	15,300

Japan's consumption of sugar showed an increase during the 1934 calendar year, reaching a figure which broke all records except that of 15,332,253 piculs set in 1932.

In the past Japan has been generally a self-supplying country, having either only a very small excess of import or export. Even 1934-1935 production, which is considered very large in Japan and is estimated to amount to 1,333,000 tons, will be only 4½ per cent. of the world total production, which is estimated at 25,165,000 tons. Her per capita consumption only slightly exceeds the international average of 22 kin per year, that in 1934 being 23.98 kin. The increase in Japanese consumption of sugar follows:

JAPANESE PER CAPITA CONSUMPTION OF SUGAR

(in kin)

Year	Annual per Capita Consumption
1912	6.22
1917	10.49
1922	19.57
1927	20.07
1928	21.27
1929	21.86
1930	20.57
1931	20.59
1932	20.59
1933	20.73
1934 (estimate)	23.98

Tables for exports and imports of sugar are given below. In spite of all political troubles China has always been the best market for the Japanese production. The figures for 1932 declined abruptly, but this was due to the Manchurian Incident, and the loss of Manchuria

which was itself a good market. If figures for Manchoukuo, Kwantung Peninsula and China are added together, it will be found that there has been no really great change as might otherwise seem indicated.

Imports from Java Since some of Japanese sugar companies are refiners rather than planters they buy crude sugar wherever they can get it at the lowest price. Often the Javanese sugar is more reasonable in price and hence usually the import of sugar from there. This was the situation in general until 1931. Domestic producers could not compete and had a hard time making profits, for the Javanese sugar kept entering the country at lower prices. The situation changed somewhat with the reimposition of gold embargo, which caused the decline of yen. The establishment of a new import tariff served to change the situation further. Since then the Japanese sugar was protected to a certain extent against the import, the producers were planning to curtail production. Prices soared remarkably. Plans to reduce production costs were taking effect. Per picul cost of the leading companies dropped from ¥7 in 1931 to ¥5 in 1932, while domestic sugar quotations rose from ¥7 in October, 1931, to ¥14 in September, 1932, elevating earnings per picul from zero to

between ¥8 and ¥9 a picul, and in this manner the sugar industry experienced its boom in 1933.

The boom, however, does not seem to have been destined to last long. The international over-supply of sugar, the constant threat that the Netherlands may abandon the gold standard, public criticism against the sugar companies due to recent consumption tax evasion case and the resultant public cry for the abolition of the tariff protecting sugar are all unfavourable factors for the sugar industry. These causes acted to keep raw sugar prices from going up. Since the boom in 1933, the price has been steadily downward. It should be noted, however, that the conditions are not very bad; only forebodings for the future are keeping down prices of sugar.

SUGAR EXPORTS AND IMPORTS OF JAPAN

(Compiled by the Japan Sugar Institute)

(in piculs)

Year	Imports	Exports	Excess of imports (-) or exports (+)
1926	8,342,785	3,445,853	(-)4,896,932
1927	7,932,264	3,186,722	(-)4,745,542
1928	7,081,896	4,450,909	(-)2,630,987
1929	4,343,394	3,769,576	(-) 573,818
1930	4,569,617	4,101,426	(-) 468,191
1931	3,505,168	3,236,023	(-) 269,145
1932	711,060	2,598,219	(+)1,887,159
1933	2,485,343	2,750,402	(+) 265,059

IMPORTS OF REFINED SUGAR BY ORIGINS

(in piculs)

Year	Java	Philippines	Hongkong	China	Cuba	Others & Total
1915	1,664,001	324,626	4,490	8	209,373	2,077,893
1926	6,267,661	291,566	12,060	380	945,622	7,568,820
1927	5,879,517	134,416	28,344	69	936,594	7,022,826
1928	6,230,002	21,265	1,639	—	89,266	6,350,922
1929	3,673,640	7,266	—	8	112,686	3,795,281
1930	4,072,494	3,020	4	14	641	4,077,603
1931	3,304,251	10	9	—	—	3,305,275
1932	644,927	—	10	—	25,411	671,299
1933	2,184,499	—	4	—	35,348	2,210,124
1934	1,727,188	4,197	—	—	—	1,732,188

EXPORTS OF REFINED SUGAR BY DESTINATION

(in piculs)

Year	China	Manchou-kuo	Kwantung	Soviet Union	Hongkong	British India	Others	Total
1924	1,779,075	—	98,687	5,259	688	—	—	1,881,709
1925	2,175,020	—	189,941	20,741	2,349	—	—	2,388,051
1926	2,682,153	—	253,746	64,999	398	—	—	3,002,132
1927	2,228,913	—	229,635	149,735	22,773	—	—	2,631,057
1928	3,119,488	—	374,154	221,851	77,591	4,539	2,346	3,799,969
1929	2,379,885	—	547,469	93,354	168,130	31,259	1,140	3,220,937
1930	3,007,628	114,804	326,541	31,796	154,132	1,015	1,482	3,637,298
1931	1,895,667	83,922	370,810	57,483	208,996	883	—	2,622,211
1932	466,577	54,790	799,840	15,552	10,535	37,395	4,518	1,389,507
1933	901,825	96,703	1,015,941	81,812	15,547	41,337	19,952	2,172,317
1934	1,041,327	162,255	715,093	40,904	—	—	60,089	2,019,863

Refined Sugar At present there are fifteen refineries in Japan proper and one in Korea. The total refining capacity is about 2,800 tons per day, so that if the average working days per year are 300, production will be about 14,229,600 piculs a year. Against this only a little over 6,900,000 piculs of refined sugar are produced, hence there exists a great surplus capacity.

1934 Sugar Business In looking over the condition of consumption in 1934, the stock at the end of the year was 828,000 piculs, which was

one-third of 1933, and conditions of demand and supply remarkably improved. This was mainly due to the enforcement of curtailment of production in 1932-33 and 1933-34, and also the increased consumption in the early part of the year.

The record production in 1931-32 year destroyed the balance of demand and supply, and the situation was relieved through hard efforts to curtail production, sacrifice exports of surplus sugar, etc. as has already been explained.

DOMESTIC PRODUCTION

(in 1,000 piculs.)

Kinds	1931-32	1932-33	1933-34
Taiwan centrifugals	16,287	10,290	10,373
.. red sugar	196	281	209
South Sea Islands centrifugals	695	729	750
Loochoo	263	323	268
Daito	135	71	96
Loochoo black, and white lower grade	1,023	1,051	908
Others	233	263	250
Beet sugar (Korea)	29	—	—
.. .. (Hokkaido)	405	402	383
Total	19,266	13,406	13,437

The market opened in 1934 rather weak, but after signing of sugar supply agreement October, 1934, its tone became stronger. When Japan-Dutch East India Conference was opened, the market became weak

again as it was feared that the Conference would fail. Toward the close of the year the price rose due to the delay in marketing of new product.

AVERAGE WHOLESALE PRICES OF SUGAR in 1934

(Quoted in yen for every 100 kin)

Month	Refined Sugar	Centrifugals
January	19.76	17.51
February	20.44	17.90
March	20.09	18.00
April	19.60	15.90
May	19.36	15.38
June	19.68	15.43
July	20.67	15.73
August	21.50	16.32
September	22.70	17.07
October	22.34	17.23
November	22.20	17.34
December	22.55	18.01
Average of the year	20.92	16.82

Belgium's departure from gold in the early months of this year created a sensation among sugar men of Japan, for all fear that the Netherlands will follow suit. If the Dutch

should quit the gold standard the guilder would fall and the result would be that Javanese sugar could enter Japan more easily.

The yen-guilder rate on April 10, 1935, was 41.75 per ¥100. If the Dutch exchange should fall 25 per cent. the rate would drop to 55 guilders. A decline of 30 per cent. would make it 60 guilders. Prices of Japanese sugar are more or less controlled by the import prices of Javanese sugar and a drop of the guilder would automatically lower prices in Japan, which is a cause of apprehension in the country.

Various Sugar Companies

The following table shows capacities, standings, etc., of the principal sugar companies in Japan as of March, 1934:

CAPITAL, CAPACITIES, ETC., OF SUGAR COMPANIES

Company	Capital		Capacity		Production of Sugar (1933-34) piculs.
	Authorized in yen	Paid-up in yen	Raw sugar in long ton	Refined sugar long ton	
Taiwan Seito Co., Ltd.	63,000,000	43,080,000	10,548	480	2,800,000
Dai-Nippon Sugar Co., Ltd.	51,416,000	45,779,100	8,320	910	2,081,325
Meiji Seito Co., Ltd.	48,000,000	39,200,000	7,520	450	1,648,000
Ensuiko Seito Co., Ltd.	29,250,000	17,437,500	5,250	400	1,522,000
Niitaka Seito Co., Ltd.	28,000,000	10,750,000	2,932	80	524,750
Teikoku Seito Co., Ltd.	18,000,000	16,194,830	2,888	—	901,292
Hokkaido Seito Co., Ltd.	4,700,000	3,700,000	—	—	220,629

Brewing

Beer

Historical Beer was brewed in Japan about 80 years ago by a certain scholar, Mr. Ko Kawamoto, who, as he learned how to brew it when he visited Admiral Perry's fleet, on the latter's visit to Japan, tried to brew on his own private account. In 1870, beer was brewed for the first time on a modern industrial basis by an American, Mr. Gobland, in Amanuma, Yokohama. Four years later, Marquis K. Kuroda saw that the soil of Hokkaido was par-

ticularly suitable for barley, so he established a brewery in Sapporo, and soon others were built in Meguro, Tokyo, in Suita, Osaka, in Hodogaya, Yokohama, and other places, and the industry has so developed that at present Japan has six beer brewery companies and fourteen breweries with a total capacity of about 1,500,000 koku.

Production and Consumption In order to show how this industry has developed in Japan we give below figures of beer brewed during the last two decades.

Year	Production of beer (in koku)
1912	196,404
1915	248,818
1918	511,525
1921	656,174
1923	805,905
1926	767,533
1927	795,335
1928	904,377
1929	805,945
1930	846,014
1931	797,544
1932	779,283
1933	959,762
1934	970,494

Consumption of beer in 1912 was only 3.25 go (one go is equivalent to 0.18039 hl., about one-third of a pint) per head, but this had increased to 10.16 go in 1923 and to 13.53 go in 1929.

As regards the capacities of different breweries, five of them brew more than 150,000 koku, 3 over 100,000 koku and 2 over 30,000 koku per year.

Though any hasty conclusion cannot be made, since the number of breweries is very small, it is presumed that in future a capacity of at least 100,000 koku should be made a unit for any establishment. The brewing of beer differs from the brewing of Japanese saké in that it does not require much personal skill. It can be brewed on a large scale in a mechanical way, and as the brewing is done in this country in the German style, it requires large mechanical equipment, hence, large capital. Judging from the past, the brewing of beer in Japan will in future be carried out on a very large scale.

The Japanese taste for beer originated in the taste for saké. Originally, people who were used to the Japanese liquor shifted their taste from saké to beer, or, drank both. Nowadays, beer has become so popular that the people go to it without the agency of saké, and this ten-

dency will be accelerated in the future. In recent years the mode of living of the Japanese has been westernized to a very great extent, and especially with improvements in the heating arrangements of houses and the extreme westernization of food has the taste of the people for beer been intensified. Moreover, with the advance of knowledge about hygiene, the middle-class people seem to give a preference to beer, which contains a smaller percentage of alcohol than saké.

Japan as Beer Consuming Country
In spite of the increase in consumption, Japan still occupies an insignificant position as beer producer and consumer in the world. Her production of about 1,000,000 koku in 1933 stands at the fourteenth in the list of beer producing countries with the U.S.A.'s 27,000,000 koku as the first. Also her per capita consumption of 2.77 litres was the twenty-eighth in the list of beer consumers with Belgium's 176.46 litres at the head. This is easy to explain. Most of her people take saké, the production of which is about 4.5 times as large as beer. Saké is the standard of drink, only a very small quantity of which is enough for average man. In other countries, beer is a staple, an article of food. But in Japan it is something of luxury, reserved for the people of middle and upper classes. A bottle of beer, which contains about one-fifth of a gallon of beer, sells about at 50 or 60 sen, which is too high for average Japanese farmers or wage-earners. If the Japanese of these classes take as much beer as the Belgians do they would spend greater portion of their income on beer.

Exports and Imports Exports of beer in recent years follow:

EXPORTS OF BEER

(Quantity in koku and value in ¥1,000)

Destination	1931		1932		1933		1934	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
Manchoukuo	2,176	201	5,476	383	15,988	966	21,937	993
Kwantung	9,030	730	20,542	1,509	37,944	2,240	48,874	2,160
China	5,173	426	16,043	1,171	12,647	758	11,670	587
Hongkong	2,312	177	1,610	121	1,576	94	2,188	103
British India	7,551	641	10,875	694	16,255	901	11,176	528
Straits Stmts	1,501	118	1,292	96	1,317	73	2,038	92
Dutch India	2,828	234	8,856	535	29,944	1,639	4,209	225
Others and total	36,637	3,034	68,812	4,835	132,373	7,684	118,009	5,535

In spite of the fact that beer which was exported has been exempt from brewing tax since 1912, the export has not been very encouraging. During the Great War, export temporarily increased, due to England and Germany having neglected their Oriental markets, but with the return of peace their attention was again directed toward the East and Japan's export there fell off with it. Since then the export fluctuated between 23,000 and 53,000 koku. The decline of yen has given the export business an importance it never had before, and in 1933 the export totalled 68,812 koku, the largest since 1918. In 1933 the export amounted to 132,373 koku, valued at ¥7,684,000. Relegation in the U.S.A. gave a great spur, the export to that country including Hawaii amounting to ¥537,000. But the export to America proved but temporary; it sharply fell off in 1934. As a whole the 1934 export showed a slight decline as compared with 1933, which was due to the smaller British India and the Dutch East Indian markets. In the latter the Government took steps to end imports from Japan, which reduced the export to that country drastically. On the other hand, exports to Manchoukuo and Kwantung Peninsula increased, so far the latter proving as the best market for Japanese beer abroad. Demand in Manchoukuo is steadily gaining, but owing to the establishment of the

Manchurian Beer Company, Ltd. export to that country is bound to decrease in future.

Production Capacity Production capacity of breweries was 1,090,000 koku in 1922, which steadily expanded. The increase of capacity was especially marked after the Great Earthquake of 1923, and consumption of beer could not keep pace with it. It increased to 1,700,000 koku in 1931, while actual production was barely 740,000 koku, and it was further increased up to 1,830,000 koku. When the industry was in chaotic conditions during the time of depression, which was made worse by the competition among brewers, this over-expanded capacity proved a great weakness of the industry. The production was curtailed then to the extent of 55 per cent.

Production of Raw Materials The principal raw commodity for brewing beer is barley. This, until recently, was mostly imported, but at present it is being grown in various parts of the country through the brewers making contract with village and town agricultural associations. In this manner about 300,000 koku, which is about the quantity required by the brewers, is being produced annually, and as most of the breweries have their own equipment for converting the barley into malt the necessity of importing either of these materials is obviated.

However, the quantity of barley now raised yearly may prove insufficient if the demand for beer increases to any great extent and supplies will then have to be obtained from abroad.

Another important raw material is hops. Though several attempts have been made at different times to grow them in this country the yield has always been very small, and reliance has to be placed on foreign supplies.

The Beer Industry in 1934 The beer industry gives an evidence that not all the branches of industry were benefited by the expansion of the heavy industries and lower exchange. Production of beer showed but slight increase and its export declined. The loss was chiefly caused by election of mills in Korea, though the output of these mills was slightly smaller than the reduction in production in Japan proper. Beer did not clearly join the upward swing of other industries.

The beer industry was almost under complete control before 1930, prices until then being fixed by three influential mills, which were the Dai Nippon, the Kirin and the Nippon Beer Kosen. The last named withdrew from the agreement in the spring of 1930 with an intention to take a larger share of business through underselling, and for the time being the control was lost and the industry was in perfect chaos. In June, 1933, the Joint Sales Company of Beer was established with a view of establishing sales quotas and prices for the Dai Nippon and the Kirin. As a preliminary to this arrangement the Dai Nippon Beer absorbed the Nippon Beer Kosen.

The year 1934 was the first year after the Joint Sales Company of Beer was established. The influence of the cartel was evident. There was no competition; sales was good,

though somewhat smaller than 1933.

As regards exports, America did not buy as much as expected, while the Dutch East Indies which bought 30,000 koku in 1933 took only 4,000 koku due to import restriction. On the other hand, exports to Manchoukuo and Kwantung Peninsula increased and exports, as a whole, decreased 14,000 koku.

The Dai Nippon Beer Co., Ltd. established the Tokyo Beer Co., Ltd. capitalized at ¥1,500,000 on joint account with Kotobukiya Co. in January. In the same month sales agreement was arrived at with the Sakura Beer Co., Ltd. which was the only outsider to the cartel. In this manner, the domestic market was placed under complete control of the cartel. On the other hand, export is under control of Teikoku Beer Export Guild, so that the control came to be exercised in this field also and is now practically complete.

With the domestic market well under control, beer industry began to expand both abroad and in colonies. The Dai Nippon Beer Co., Ltd. established the Keijo Beer Co., Ltd. at Keijo with a capital of ¥6,000,000, one-fourth of which was paid up, and began brewing on January 6, its capacity being 100,000 cases a year. The Kirin Beer Co., Ltd., too, established the Showa Kirin Beer Co., Ltd. in the same city with a capital of ¥3,000,000, ¥1,200,000 of which was paid up. This mill has also a capacity of 100,000 cases a year. In this manner beer will be supplied in Korea by these companies, the sales of which will be controlled by the Keijo Branch of the Joint Sales Company of Beer in Japan proper. In Manchoukuo, the Manchurian Beer Co., Ltd. was established on a joint account of the Dai Nippon and the Kirin Beer Companies, with a capital of ¥2,000,000

fully paid up, which will supply from 100,000 to 150,000 cases a year, beginning with 1935. Aside from this the Great Manchurian Hops Beer Co., Ltd. with a capital of ¥10,000,000 was also established in Mukden. This company intends to raise hops in Manchuria in addition to brewing beer. Five brewery companies which

were around Harbin with two others in Mukden, the total capacity of which was 400,000 cases a year, were absorbed by this new company.

Beer Brewery Companies Capitalization, number of breweries, and capacity, etc. of principal brewing companies at the end of the second term of 1934 follow:

CONDITIONS OF PRINCIPAL BREWING COMPANIES

(in ¥1,000)

Companies	Authorized Capital	Paid-up capital	Profit	Breweries	Capacity (in koku)
Dai Nippon	94,000	60,000	6,027	7	880,000
Ebisu group	—	—	—	3	350,000
Union group	—	—	—	—	1,230,000
Total	—	—	—	—	—
Kirin	10,800	8,800	1,682	3	400,000
Tokyo	—	—	—	—	—
Cascade group	1,500	—	—	1	30,000
Sakura	4,000	—	—	1	120,000

Japanese Saké

History Japanese saké, brewed from rice, has been the principal alcoholic liquor of the Japanese from olden times. It is brewed everywhere in the country, but the most famous places are the "Nada Gogo," five villages in Hyogo prefecture, the climatic conditions of which are peculiarly suited for its production. In recent years, Hiroshima and Fukuoka prefectures have also begun to brew saké of superior grade. The best rice for saké brewing is raised in Kumamoto, Hyogo and Okayama prefectures.

As saké has been the chief drink of the people for many centuries it has been heavily taxed all along. In 1879, a tax of ¥2 per koku was levied and since then the rate has been gradually increased until it now amounts to ¥40 per koku and brings in an annual revenue to the Government of ¥200,000,000.

No study of brewing saké on a scientific basis was started until as

late as 1895. In 1904, a Brewery Experimental Station was established by the Government, at Oji, a suburb of Tokyo, various experiments were made, and many good experts trained. The art of brewing has now advanced a great deal and the quality of saké brewed has become practically uniform. The quantity now brewed annually is about 5,000,000 koku, nearly all of which is consumed at home, only a negligibly small quantity being exported to China and several other countries.

Present Condition Production of saké in recent years is as follows:

Year	Production (hectolitres)	Value in yen
1922	6,151,335	272,453,906
1923	11,175,024	405,712,482
1924	10,942,672	339,269,684
1925	10,454,276	322,431,958
1926	10,460,537	313,419,561
1927	9,812,516	298,738,816
1928	9,805,899	293,386,838
1929	9,608,146	301,716,100
1930	8,576,989	275,599,803
1931	7,435,560	233,122,205
1932	6,908,842	269,215,545
1933	7,989,788	307,177,000

The peculiarity of brewing saké is that large quantities of raw materials cannot be fermented at once. According to the growth of saccharomyces saké, steamed rice, yeast, and water are gradually added and fermentation is brought about slowly. If this method is adopted, with only a very small quantity of saccharomyces saké a large amount of raw materials may be fermented and saké of good flavour may be brewed. If, on the other hand, a large quantity of raw materials is fermented at one time by using a great deal of saccharomyces saké, the resultant saké will not taste good.

Consumption of Saké Nothing is more directly affected by prosperity or depression than the consumption of saké, and it can be quite well understood that consumption, owing to the economic depression, has considerably decreased during the last few years. The farming districts are now feeling the depression very severely, and as saké is consumed more in rural than in urban districts, the saké brewers have suffered in proportion.

The Saké Business in 1934 In anticipation of heavy industries and export boom, amount of saké brewed in 1933 exceeded that of 1932 by about 108,000 hl. But in 1934, depression in rural districts was so severe that the consumption of saké did not increase, and only toward the close of the year there was activity in sales.

Owing to higher price of 1933 rice crop it was anticipated that the price would be higher in 1934, which was impossible, however, due to dull demand. But, toward the close of the year, with the approach of demand season, market suddenly became very active, and sales increased. It is considered that saké brewed in 1934 was about 360,000 hl. less than 1933.

Saké Brewery in Manchoukuo Plans were under consideration to establish saké brewery in Manchoukuo, which materialized in 1934. The brewers of "Kiku-Masamuné" of Nada, near Kobé, established a company there, which has a capacity of 1,500 koku a year of saké newly branded "Manshu-Kiku-Masamuné", while the brewers of "Hakkaku" also established one with the same capacity, the saké newly brewed by this company being branded "Kinkaku". Both began brewing on November 15.

Soft Drinks

As Japan is geologically blessed with mineral springs, the people were not slow to study their medicinal effects, and hot springs were used as baths from olden times. As to the utilization of mineral spring water for drinking purposes, mineral water from Rokko Mountain in Hyogo prefecture was the first of its kind that was put on the market. This was as late as 1883, and the drink was named "Mitsuya Hiranosui". Three years later, some Englishmen taught the making of artificially aerated water and with the importation of Codd's bottles and syphon-bottles the manufacture of sweetened aerated water originated. These drinks soon became very popular and the industry made rapid development. After the Russo-Japanese War, "Champion" cider was put on the market to be soon followed by lemonade, citron, and different kinds of syrup, etc.

At present the total production of soft drinks amounts to 710,000 koku a year, of which sweetened drinks accounts for 93%, the rest being ordinary unflavoured aerated water or soda-water. Producers of soft drinks may be roughly divided into two classes. The first of these is composed of those who manufacture

the drinks along with beer. These have good equipment and produce on a large scale. The second class

is made up of those many who produce on a small scale and sell their products locally.

PRODUCTION OF SOFT DRINKS

Year	Lemonade koku	Cider koku	Soda water koku	Total koku
1925	281,219	252,495	17,613	551,327
1926	884,741	238,940	23,195	646,876
1927	265,250	230,228	18,635	514,113
1928	219,425	246,844	16,410	482,679
1929	222,773	263,181	18,714	504,668
1930	176,835	218,629	17,022	412,486
1931 ¹	136,826	212,436	15,460	364,722
	Lemonade, etc.		Soda water, etc.	Others and Total
1932 (in litre) ²	22,954,172	73,047,750	7,119,783	161,213,950
1933	24,152,278	53,684,554	7,384,382	129,667,486

¹ Figures are for production between March 1, 1931 and February 28, 1932.

² (See Chapter XXXII.)

Soft drinks which are now selling in Japan can be classified from the standpoint of water and gas used into the following:

(1) Those manufactured of natural spring water and natural carbonic acid.

(2) Those manufactured of natural spring water and artificial carbonic acid.

(3) Those manufactured of filtered or well-water and artificial carbonic acid gas.

Canning

Introduction

The canning industry in Japan was started as early as 1870, but the real impetus to its development was given by the Sino-Japanese and the Russo-Japanese Wars as they created a great demand for canned provisions for the Army and Navy. The Treaty of Portsmouth also served to further encourage this industry by giving Japan fishing rights in Kamchatka and the Maritime Province of Siberia, and together with the development of can manufacturing and floating canneries, the above have been the cause of the great progress in the canning industry as a whole.

Present Conditions of the Industry

At present, the packing industry in Japan is in a fairly developed state in all of its branches. Canned meats have reached a stage where the quantity of production cannot be increased. The demand for meat in Japan has expanded so far that supply cannot keep pace with demand, a shortage of cattle is being felt and a plentiful supply for canning is not forthcoming. On the other hand, canned vegetables, such as canned bamboo shoots, are finding good markets in the U. S. A. and China. Of all the fruits procurable in cans pineapples are the most popular with the Japanese. They are produced in Formosa, and of the 450,000 cases or more that are pack-

ed in that island about 400,000 cases are consumed in Japan proper while a greater part of the balance is sold in Formosa, and only a few thousand cases are exported to foreign countries. As to canned fish and shellfish, the production of canned crab and salmon dominates all others. In no other places are canned crabs produced in such large quantities as in Japan, and most of this production is exported to the U. S. A.,

annual exports being valued at about ¥10,000,000. Red and silver salmon are finding a good market in Great Britain. In view of the fact that catches of salmon on the coast of the U. S. A. and Canada are decreasing the exportation of canned salmon is expected to increase, as also is the exportation of crab-meat, for the demand for it in the U. S. A. is increasing steadily.

PRODUCTION OF CANNED PROVISIONS

IN 1933

(Quantity in 1,000 kg. value in ¥1,000).

Kinds	Quantity	Value
Canned meats	3,237	2,759
Canned fishes	57,219	42,358
.. fruit	3,576	2,108
.. vegetable	7,496	2,809
Other canned food	33,517	14,028
Total	105,045	64,057

The export of canned provisions from Japan for 1934 amounted to 110,417,000 kin in gross, worth ¥50,304,000, showing an increase of ¥3,320,000 over 1933. The low exchange rate was a potent factor to have caused the heavy gain in exports. Of the exports, 16,099,000 kin worth ¥11,170,000 was for the United States; 43,526,000 kin, worth ¥24,711,000 for the United Kingdom; 4,566,000 kin worth ¥1,197,000 for the Kwantung Leased Territory; 1,690,365 kin worth ¥828,000 for Hawaii; 1,342,000 kin worth ¥797,000 for Australia; and 43,194,000 kin worth ¥11,601,000 for others. Catches in Northern Waters in 1934 were almost unprecedentedly large, exceeding even those of 1929. The principal product, i. e., the canned red salmon totalled more than 1,000,000 cases, if products in the Northern Curile Islands were included, while product of canned crab totalled 417,000 cases. Export of canned salmon also proved good, as shown in

the table attached at the end of this chapter. However, 1934 good catches in Northern Waters seem partly due to fishing ruthlessly carried out. In order to terminate ruthless way of fishing and to cultivate propagation of fishes, the Department of Agriculture and Forestry took steps to restrict, after 1935, the number of vessels engaged in fishing in Northern Waters to 30 per cent. less than the number engaged in 1934.

Export of Tunny Favoured by low exchange, export of tunny, especially to the United States, made a rapid development in recent years. It occupies the third position among fish products as export articles, the first and second being salmon and crab in the order named. Its amount exported in 1933 totalled ¥10,000,000, greater portion of which was sold in the U. S. A., where oiled canned tunny is highly valued as sea-chicken, which is produced almost exclusively in Shizuoka prefecture. The U. S. A.

now began to bar import of tunny and in January, 1934, raised duty from 30 to 45 per cent. This led to a conference held at Los Angeles between exporters and importers.

A part of tunny is exported refrigerated and the balance as canned food. American importers proposed to restrict import of the two together to 10,000 tons a year which was one half of the quantity taken in 1933. This, however, Japanese exporters could not accept. The conference did not result in anything after all, it having finally failed in June. However, 1934 fishing of tunny was a poor haul, which naturally restricted the export of its product in that year.

Manufacturers

Of all the packing companies, the

Nichiro-Gyogyo Kaisha, Ltd. (Japan-Russian Fishing Co., Ltd.) is the largest, in fact it is regarded as the largest of its kind in the world. The company is engaged in the manufacture of canned crab and salmon on the east and west coasts of Kamchatka and along the coast of the Sea of Okhotsk and the Maritime Province. The number of fishing districts of the company differs each year, but in 1931, the company had 135 fishing districts and 22 canneries. Besides these the company owns 9 cold storage vessels, the capacities of which are in total 13,156 tons, and several refrigerators in Aomori and Shibaura. The space in these refrigerators is 342,000 cu. ft., with a capacity to hold about 140,000 salmon.

PRODUCTION OF CANNED CRAB

Year	In Northern Waters		In Floating Canneries		In Other Places		Total
	Qty in cases	Value in yen	Qty in cases	Value in yen	Qty in kg.	Value in yen	Value in yen
1924	31,136	1,401,120	40,917	1,841,265	1,898,659	2,587,107	5,829,402
1929	105,780	4,231,200	346,813	14,437,322	785,696	1,157,297	19,875,819
1930	73,035	2,395,852	405,377	13,148,175	851,739	1,021,333	15,544,027
1931	63,947	1,905,843	240,207	7,302,961	986,756	1,065,915	10,274,719
1932	47,480	1,670,583	173,526	5,467,542	1,097,198	1,345,615	8,483,740
1933	25,129	1,168,955	153,712	7,476,267	4,549,909	4,686,704	13,673,308
1934	29,155	—	162,079	—	225,839	—	—

PRODUCTION OF CANNED SALMON

Year	In Northern Waters					
	Red Salmon		Salmon		Trout	
	Qty in cases	Value in yen	Qty in cases	Value in yen	Qty in cases	Value in yen
1924	522,707	12,819,038	61,683	864,582	191,111	2,574,544
1929	615,955	16,330,875	75,661	620,042	88,087	1,005,073
1930	601,933	12,504,247	102,905	912,064	569,630	5,035,112
1931	511,121	12,602,559	55,070	517,433	184,253	1,266,844
1932	416,164	13,771,888	40,186	659,716	718,091	5,469,149
1933	287,666	9,272,017	27,839	543,168	857,492	3,603,966
1934	460,062	18,530,401	45,637	802,902	837,306	8,929,175

Year	In Other Places		Total
	Qty in kg	Value in yen	Value in yen
1924	465,281	228,312	16,486,526
1929	15,887,077	5,697,016	23,953,006
1930	6,689,843	2,601,618	21,053,041
1931	8,697,075	2,417,485	16,904,319
1932	3,399,904	1,215,083	21,115,836
1933	11,614,976	4,828,354	18,247,505
1934	—	—	28,262,478

EXPORTS OF CANNED CRAB AND SALMON

(Quantity in 1,000 cases, in 100 kin after 1928. Value in 1,000 yen)

Years	Great Britain		France		U.S.A.		Canada		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
1922	Crab	5	31	—	—	28	183	—	—
	Salmon	25	90	—	—	—	—	—	—
1923	Crab	3	20	—	—	96	587	—	—
	Salmon	10	41	—	—	1	3	—	—
1924	Crab	161	979	5	47	575	3,567	8	12
	Salmon	—	—	—	—	—	—	—	—
1925	Crab	293	1,838	5	33	1,186	7,503	10	60
	Salmon	12	48	—	—	—	—	—	—
1926	Crab	558	3,376	4	24	1,312	7,948	21	118
	Salmon	35	115	—	—	—	—	—	—
1927	Crab	877	4,554	21	101	1,515	8,238	28	176
	Salmon	419	1,274	—	—	—	—	—	—
1928	Crab	76,811	5,977	4,629	340	134,641	10,428	2,610	182
	Salmon	20,509	571	4,459	114	304	12	1	0
1929	Crab	41,330	3,713	6,081	523	113,162	9,321	3,036	254
	Salmon	73,924	1,797	71,822	1,735	46	1	—	—
1930	Crab	43,647	3,460	13,608	1,053	103,111	8,338	2,692	201
	Salmon	46,828	1,330	88,006	1,878	84	1	—	—
1931	Crab	43,701	3,623	13,409	975	93,607	6,760	1,783	127
	Salmon	33,173	949	119,050	2,196	2	—	—	—
1932	Crab	49,628	3,653	19,772	1,369	60,738	4,534	1,423	96
	Salmon	54,442	2,709	92,798	1,759	6,657	60	—	—
1933	Crab	69,347	6,574	30,114	2,332	76,367	7,335	773	69
	Salmon	86,522	5,415	180,969	4,463	115	2	—	—
1934	Crab	64,647	6,253	14,319	1,500	60,056	5,756	516	45
	Salmon	276,810	16,236	11,052	286	1,099	25	—	—

Years	Australia		Others		Total		
	Quantity	Value	Quantity	Value	Quantity	Value	
1922	Crab	—	—	600	4,216	633	4,374
	Salmon	—	—	25	105	80	195
1923	Crab	3	20	509	3,349	611	3,956
	Salmon	—	—	4	20	15	64
1924	Crab	17	92	42	118	796	4,835
	Salmon	—	—	3	11	3	11
1925	Crab	49	260	116	365	1,609	10,069
	Salmon	—	—	124	91	36	139
1926	Crab	74	396	112	655	2,081	12,517
	Salmon	—	—	6	19	41	134
1927	Crab	103	461	236	1,135	2,780	14,661
	Salmon	6	13	28	76	453	1,463
1928	Crab	7,634	533	13,391	1,033	23,336	13,571
	Salmon	1,351	38	14,359	333	40,983	1,098
1929	Crab	11,099	953	17,284	1,438	191,592	16,712
	Salmon	1,908	75	32,099	778	179,799	4,338
1930	Crab	8,840	662	10,325	755	182,223	14,477
	Salmon	3,576	133	26,482	690	164,976	3,982
1931	Crab	314	24	9,055	649	167,089	12,158
	Salmon	643	16	26,568	536	173,436	3,697
1932	Crab	2,909	134	13,143	914	147,633	10,750
	Salmon	553	24	57,242	1,087	208,672	5,039
1933	Crab	2,510	209	13,237	1,550	197,348	13,619
	Salmon	2,213	108	54,032	1,242	323,851	11,230
1934	Crab	5,833	487	14,335	1,379	159,806	15,420
	Salmon	5,103	263	82,416	2,050	376,480	13,860

CHAPTER XXII

MISCELLANEOUS INDUSTRIES

Paper, Cement, Ceramics, etc.

Paper

Historical and General

Paper-making in Japan remained a handicraft for over twelve centuries after a Korean priest, Doncho, introduced the technique in 610 A. D. (Some writers maintain that paper existed in this country prior to that date.) During this long period of time, various grades of paper were produced from fibres of certain shrubs such as "koso¹," "mitsumata²," "gampi³," etc.

Foreign-style paper was made for the first time in the 7th year of Meiji, 1874, in a small mill in Yuko-sha, Tokyo, through the assistance of an English engineer. Several more mills were established the following year, but the development of the industry was naturally slow on account of the small demand. In the beginning, the raw materials used for foreign-style paper were chiefly rags, but in 1889, wood pulp was used for the first time in a mill which belonged to the Oji Paper Mills, Ltd. At first, the smallness of quantity required and competition from abroad made it that the industry had a very severe struggle, but as with all other industries, the wars with China in 1894-95 and with Russia in 1904-5 gave it a great chance of development. In 1910, the Tomakomai Mill of the Oji Paper Mills, Ltd., which

had been under construction since 1906 began operation. This was the turning point in the history of our paper-making industry, as Japan began to operate a mill in a place where she could get ample supplies of wood for pulp. With the establishment of the Tomakomai Mill Japan became self-supplying with respect to newsprint. Again, the Oji Paper Mills, Ltd., took the initiative in establishing a pulp mill, in 1912, in Otomari, Saghalien Island, but was quickly followed by the Fuji Paper Mills, Ltd., and the Karafuto Industrial Co., Ltd. The industry was just getting well settled when the Great War broke out and prosperity was forced upon it. Importations of foreign-style paper was practically stopped. Demand at home advanced, exports increased and the industry expanded at a great speed. The production of foreign-style paper in 1881 was only 3,968,000 lbs., it increased to 327,614,000 lbs. in 1914, 519,141,000 lbs. in 1919, 817,383,000 lbs. in 1924, and 1,418,187,000 lbs. in 1929.

In 1932 the Oji Paper Mills, Fuji Paper Mills and Karafuto Industrial Company were merged into one firm under the name of the Oji Seishi Kabushiki Kaisha (Oji Paper Manufacturing Company, Ltd.). It has a subscribed capital of ¥149,988,000, of which ¥112,661,475 is paid up, and is virtually monopolistic having control over 80% of the total paper production in the country and pro-

¹ Paper mulberry. ² Golden flowered Edgeworthia (*Edgeworthia chrysantha*). ³ An indigenous plant (*Wikstroemia sikokiana*).

ducing about 85% of the total foreign-style paper. The real strength of the Oji Paper Manufacturing Co., Ltd. lies in its almost complete monopoly of pulp production. In 1933 it turned out 590,000 tons, which was equivalent to 95.2 per cent. of domestic production.

Production

The paper-making business in Japan was carried on for a long time as a side-line or cottage industry, and even to-day there are numerous families in local districts which are engaged in Japanese paper making. Foreign-style papers are produced on a modern industrial basis. Nine large companies form the Nihon Seishi Rengokai (The Paper-Makers' Association of Japan). They are the Oji Paper Manufacturing Company, Ltd., Mitsubishi Paper Mills, Ltd., Hokuetsu Paper Mills, Ltd., Nihon Paper Industry Co., Ltd., Inui Paper Mills, Ltd., Nihon Paper Mills, Ltd., Nishino Paper Manufacturing Plant, Showa Co., and Asahi Co. These companies together produce 98% of the foreign-style paper in Japan. The chief functions of this organization at present are to make agreements for the limita-

tion of production, for the joint control of stocked paper and for the maintenance of selling prices. Four of the member companies produce pulp in addition to paper, and the largest company, Oji, produces newsprint, the production of which is so large that they practically supply all domestic requirements, only a very small quantity being imported.

Production as well as sales broke previous records of 1,418,187,000 pounds and 1,379,231,000 pounds respectively in 1929. The chief cause for rise in volume of output and sales was a lifting of pressure from import paper because of a decline in the yen's exchange rate.

In 1930, the consumption of paper was reduced to an alarming degree and as a measure to dispose of surplus products, the Nihon Seishi Rengokai agreed to reduce production. During 1931, the curtailment was 35% from January to August, 45% from September to November, and 55% in December. The production of cardboard was also curtailed by 45%. In this manner, production in 1931 was reduced by 37,000,000 lbs. or 2.7% as compared with the previous year. The figures in the following tables show production since 1924.

PRODUCTION OF PAPER SINCE 1924

(Quantity in 1,000 kg. and value in ¥ 1,000)

Year	Printing paper		Copying paper		Drawing paper		Wrapping paper	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	285,926	72,084		586		240	17,848	3,601
1925	351,983	97,992		10,060		4,178	9,922	2,834
1926	366,572	98,835		8,948		1,869	12,649	2,867
1927	347,300	86,699		3,975		1,557	20,799	5,083
1928	355,056	90,172		4,331		1,411	17,704	4,007
1929	366,709	87,745	3,592	1,206	3,899	1,361	10,662	2,800
1930	369,323	74,055	4,651	1,587	731	243	14,557	2,539
1931	321,711	62,416	3,850	1,120	4,074	1,137	9,567	1,539
1932	217,196	54,566	2,366	518	3,374	1,127	22,655	4,360
1933	345,594	68,705	23,568	5,354	3,342	1,462	27,696	6,300

Year	Match paper		Cigarette paper		Paper "renshi"		"Hanshi"	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	1,931	585	15,485	3,920	2,196	578	2,495	6,769
1925	2,753	841	2,515	554	2,066	705	2,258	6,496
1926	2,299	815	6,625	5,285	2,485	723	970	6,804
1927	1,964	560	7,373	5,186	5,511	1,458	2,319	8,073
1928	1,636	579	7,392	4,192	2,890	688	2,149	4,752
1929	732	212	7,564	7,382	1,813	453	6,927	11,640
1930	1,005	247	6,679	5,077	6,071	1,357	4,585	6,084
1931	812	176	4,210	2,452	7,624	1,302	4,394	5,349
1932	2,088	414	3,655	2,541	3,826	670	3,122	5,654
1933	1,952	501	7,656	4,633	4	1	1,347	5,091

Year	"Minogami"		"Torinoko," and imitation paper		Board		Others and total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	471	2,490	2,904	2,904	102,756	11,571	150,440	150,440
1925	422	2,338	2,463	2,463	110,146	12,347	164,695	164,695
1926	269	1,932	4,842	4,842	114,962	14,151	179,630	179,630
1927	362	1,522	5,301	5,301	113,173	15,700	175,318	175,318
1928	194	883	7,278	7,278	135,149	17,194	182,476	182,476
1929	178	1,048	7,585	7,585	162,353	19,476	190,635	190,635
1930	128	845	4,368	4,368	150,215	15,469	154,574	154,574
1931	143	776	5,088	5,088	146,863	11,414	134,095	134,095
1932	168	954	7,120	7,120	139,253	11,646	132,170	132,170
1933	163	638	4,442	4,442	178,151	16,337	168,478	168,478

Cellophane

The monthly output of the Japanese cellophane industry, which has grown considerably within recent years, is approximately 6,000 reams produced by 11 manufacturing concerns, such as Nippon Cellophane, Tokyo Cellophane, Takasaki Cellophane, Fuji Glyphane and others. Ever since 1932 importing of the French product into Japan has been checked. Thus, the country's cellophane industry, having become self-sufficient, is today exporting this domestic product and the line is one of the most promising in the land. Cellophane exportation has been conducted since January, 1934. Orders keep coming from British India, the Straits Settlements, Hongkong and other points abroad. India is considered as an exceptionally worthwhile market for the product. Having become encouraged, many cellophane producers are expanding

their products. The 1933 production reached 574,029 kg. valued at ¥2,000,000. This industry in Japan may outdistance the corresponding French industry, and places its products on the markets of various European countries. Cellophane was first imported into about 1923, but in the following year Japanese found how to manufacture it. The Tokyo Cellophane Company started the operation and then several other companies followed suit. Both imports and exports are hardly worth mentioning in quantity and value. Its production since 1929 rapidly expanded as the following table shows:

PRODUCTION OF CELLOPHANE

Year	Production	
	Qty in kg	Value in yen
1929	16,875	86,400
1930	—	85,400
1931	64,575	176,170
1932	147,000	473,634
1933	574,029	2,008,057

Consumption of Paper

Foreign-Style Paper Looking at the figures of paper consumption, we find that until 1929 it kept increasing, but in the following year it decreased somewhat owing to the world-wide economic depression. It

increased again in 1931, but we can safely presume that the stock was considerable, because imports increased considerably while exports decreased to an alarming degree. The following table indicates the trend of paper consumption during the past twelve years.

CONSUMPTION OF FOREIGN-STYLE PAPER

(Quantity in 1,000 lbs.)

Year	Production	Imports	Exports	Consumption	Consumption per capita
1928	794,005	113,556	68,455	839,106	13.9
1929	893,249	173,384	77,164	991,469	16.2
1930	986,752	96,919	96,300	987,371	15.9
1931	1,106,788	137,622	86,462	1,157,947	18.4
1932	1,191,074	112,555	92,484	1,211,245	18.9
1933	1,343,479	102,863	134,035	1,312,307	20.2
1934	1,451,526	51,084	140,259	1,362,351	21.1
1930	1,401,711	100,160	168,808	1,333,063	19.9
1931	1,374,899	147,549	141,821	1,380,627	20.4
1932	1,311,315	99,453	87,356	1,323,412	19.0
1933	1,444,104	104,330	105,200	1,439,234	21.2
1934	1,591,474	133,556	139,715	1,605,315	22.6

Japanese Paper Accurate records of production of pure Japanese papers are not obtainable due to the extensiveness of production and the widespread and different classes of producers. Much "washi", or home-style paper is now made by machines and aside from this group we are at a loss to determine the exact amount produced. The Nihon Seishi Rengokai estimated the production of Japanese papers during 1932 to be about 150,000,000 lbs., and with an average price of 40 sen per lb., the total value was ¥60,000,000 for the year. Exports of these Japanese papers in the same year were 5.5% of the total weight. Subtracting exports from total production, about 140,000,000 lbs. remain as the amount consumed in 1932.

Pulp Industry

Since Japan started to manufacture wood pulp in 1889, its de-

velopment has kept pace with the development in the paper industry, and expansion during the time of the World War was prodigious. The industry has been in a state of depression since 1921, but in spite of that capacity of production has expanded. In the years 1930, 1931 and the early part of 1932, it was further depressed on account of the shrinkage in demand, lower prices, and competition from Canada and Scandinavia.

Production and Imports The peculiarity of paper pulp production in Japan is that there is no independent mill which produce pulp of this description, that which is produced being turned out by paper-makers, who not only produce for their own consumption, but also for the purpose of selling to other paper-makers. Most of Japanese paper-makers who do not own pulp mills, therefore, must either rely on the Japanese pulp

producers for supplies of pulp, or must buy imported pulp. Tables given below show the amount of production and import of pulp, as well

as the amount of lumber used for pulp production. There is hardly any export of pulp from Japan.

PRODUCTION OF PULP

(in tons)

Year	Sulphite Pulp	Ground Pulp	Kraft Pulp	Others	Total
1928	310,020	237,203	20,306	—	567,529
1929	335,436	257,043	25,123	—	618,602
1930	337,151	259,984	28,402	—	625,537
1931	290,171	246,489	30,049	—	566,709
1932	277,588	241,746	31,786	—	551,120
1933	310,621	267,993	40,144	1,231	620,039

QUANTITY OF LUMBER CONSUMED FOR PULP MAKING

(unit in koku)

Year	Lumber Grown in Japan Proper	Lumber Grown in Hokkaido	Lumber Grown in Saghalien Isd	Lumber Grown in Korea	Total
1928	369	2,411,572	5,268,041	224,796	7,905,884
1929	616	2,399,972	5,881,730	295,751	8,578,069
1930	879	1,991,764	6,234,974	199,280	8,426,888
1931	280	1,391,133	5,823,950	201,548	7,416,911
1932	970	1,292,612	5,224,265	276,302	6,794,149
1933	2,917	1,367,684	5,594,475	313,807	7,278,883

IMPORT OF PULP

(Qty in 100 kin and value in ¥1,000)

Country of origin	1931		1932		1933		1934	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
Sweden	272,530	1,792	230,152	1,220	439,657	3,571	800,652	7,438
Norway	365,536	4,115	174,037	2,013	527,249	7,577	669,256	10,464
U.S.A.	374,371	3,951	339,845	2,415	755,276	7,501	1,415,096	16,464
Canada	455,567	3,144	829,218	5,200	788,420	6,043	679,951	7,245
Others and total	1,712,784	15,328	1,768,762	11,840	2,708,373	27,066	3,814,656	44,265

Demand and Supply There is scarcely any export of pulp from Japan, and domestic production plus the quantity imported can be taken as

quantity required. The following table shows the relation between demand and supply.

DEMAND AND SUPPLY OF PULPS DURING THE LAST 5 YEARS

(Unit in ton)

Year	Quantity produced	Quantity imported	Quantity required
1928	567,529	73,144	640,673
1929	618,602	80,410	699,012
1930	625,537	79,107	704,644
1931	566,709	100,636	667,345
1932	551,120	101,168	652,288
1933	620,039	159,830	779,869

From 90 to 93% of the quantity consumed is taken by the member companies of the Rengokai.

Rayon Pulp Rayon pulp really holds no claim for inclusion here except that it is produced by the paper pulp manufacturing companies, who in turn are the paper manufacturers. A very brief survey only will be given. The rapid progress of rayon industry (see Chapter XVIII) is nothing but marvellous. Along this the consumption of rayon pulp increased rapidly. The total demand on rayon pulp in 1934 reached more than 70,000 tons, showing an increase of 70 per cent. over that of 1933. But the domestic production of rayon pulp amounted only to about 10 per cent. of the total requirement in 1933, and even in 1934 the quantity produced was barely 10,000 tons, which made it necessary to import more than 60,000 tons. Rayon pulp produced by the Oji Paper has now passed its experimental stage, and the company has extended mills so that it expects to produce about 24,000 tons a year starting from February, 1935. The company also established an independent company called Japan Rayon Pulp Co., Ltd., in Karafuto, with the capacity of 30,000 tons a year, which will be solely engaged in production of rayon pulp, and begins operation in April, 1935. The Oji Paper, therefore, is prepared to produce 54,000 tons of rayon pulp from the latter part of 1935.

1934 Paper Industry

Trend in General For the past two years paper industry was freed from the pressure of foreign competition through lower exchange and higher tariff. The increased demand made it possible to reduce the curtailment of production which was fixed at 55 per cent. since December, 1931

to 46 per cent. Furthermore, the sealed stock of paper has been reduced to a quantity smaller than regularly stocked quantity, which contributed in making the price strong.

The increase in volume of consumption made the demand and supply relation very sound. However, the nominal price of paper did not rise, while the price of pulp rose. Most of members of the Nihon Seishi Rengokai buy pulp so that their interest is directly opposite to that of the Oji Paper Co., Ltd. which produce 95 per cent. of the total domestic production of pulp. These companies, therefore, lodged claim with the Oji Paper Co., Ltd. and succeeded in reducing the price of pulp by 5 rin lb. in the latter part of the year.

Demand and Supply Production of foreign-style papers by member companies of the Nihon Seishi Rengokai in 1934 was 1,591,474,000 lbs. which, as compared with 1,444,104,000 lbs. of 1933, showed an increase of 147,370,000 lbs. or 10.2 per cent. Export amounted to 172,306,000 lbs. valued at ¥20,650,000 and showed gains of 18,282,000 lbs. and ¥2,963,000 or 11.8 and 16.7 per cent. respectively over the year before.

Import of paper amounted to 138,556,000 lbs. valued at ¥11,925,000 which showed an increase of 32.8 and 15.6 per cent. respectively over the year before. As to pulp, about 508,620,000 lbs. valued at ¥44,250,000 were imported from the U.S.A., Sweden, Canada, Norway and Germany, etc. The domestic requirement of pulp was 1,605,350,000 lbs., showing an increase of 148,270,000 lbs. over 1933.

Pulp Consumption of pulp by member companies of the Nihon Seishi Rengokai in 1934 follows:

CONSUMPTION OF PULP FOR PAPER

(by member companies only)

Description	in tons		Increase in 1934
	1933	1934	
Chemical pulp	307,731	401,601	3,870
Ground pulp	255,396	296,344	40,948
Total	653,127	697,945	44,818

Both chemical and ground pulp increased in consumption, the rate of the total increase being 6.8 per cent. over 1933.

As regards production of pulp, the Forestry Bureau of the Department of Agriculture and Forestry estimated 696,560 tons as against 620,039 tons of 1933. However, the boom in the paper industry was such that the domestic production of pulp alone was not enough to meet the demand, this resulted in large import, figures of which follow:

IMPORT OF PULP

Quantity of pulp imported in tons	In 1934	Increase over 1933

Figures show that the increase over 1933 was about 65,420 tons, which includes, however, a large quantity of rayon pulp.

Curtaiment of Production The boom which has been kept up since the latter part of 1932 has enabled paper-makers to reduce the percentage of curtaiment of production of foreign-style papers by successive steps. The curtaiment which was kept at 55 per cent. throughout 1933 was reduced to 51 per cent. in May, 1934 and again to 46 per cent. after October of the same year. Curtaiment of production of Japan-style paper is maintained at 30 per cent.

Pulp Industry in Manchoukuo Four companies have been established in

Manchoukuo for production of rayon and paper pulp. They are Oji Paper Mills Pulp Co., Ltd. with a capital of ¥20,000,000, Eastern Manchurian Pulp Co., Ltd., with ¥15,000,000, Japan Manchurian Pulp Industry Co., Ltd., with ¥10,000,000 and Manchurian Pulp Co., Ltd. with ¥5,000,000.

Market in General Good sales of foreign-style paper kept its price firm. However, mindful of warning of the Department of Commerce and Industry, the Rengokai did not raise the nominal price. It is thought that a further raising of price by a large margin would be impossible at present, even though the market improves further. The following table shows firm tone of the paper market indicating that the control of the industry is well maintained:

MARKET PRICE OF B IMMITATION PAPER

(in sen per lb.)

Months	Highest	Lowest
Jan.-June	16.8	16.8
July	16.8	16.7
Aug.-Dec.	16.8	16.8

As regards pulp it was once very difficult to make import owing to low exchange, which raised the price of domestic pulp. Along with the great demand on rayon pulp, price of unbleached sulphite pulp rose as high as 8.3 sen per lb. in the earlier part of the year, which later declined to 7.7 sen, again picking up to 8.2 sen toward the close of the year. The fluctuation of price follows:

MARKET PRICE OF PULP

(in sen per lb.)

Months	Highest	Lowest
Jan.-June	8.3	8.3
July	8.3	7.7
Aug.-Oct.	7.7	7.7
Nov.-Dec.	8.2	7.7

Fertilizers

In 1931 the association formed by manufacturers of chemical fertilizers, maintained a high rate of curtailment of production in order to minimize the loss resulted from the general alarming situation on industries, especially on agriculture, but the dumping of sulphate of ammonia by British and German manufacturers swept the fertilizer market and the prices of bean cake, fish guano, sulphate of ammonia, superphosphate of lime, mixed fertilizers, cyanamide, etc., slumped to destructive levels. The domestic manufacturers did everything possible in their powers to stop importations. They proposed the raising of the rate of import duty, the passing law, the establishment of a system of special permits for import and export, and so on, but practically in vain. The price of sulphate of ammonia declined to as low as ¥60 per ton. The situation was very serious, and at last, in November, a special permit system was put into effect through a Departmental ordinance. A ministerial change took place during December and the Seiyukai Party came into power. The Government at once re-imposed the embargo on gold, exports and the stock market immediately became active, and industries, including the fertilizer industry, followed suit.

The problem of food in Japan is a serious one. The Japanese population is increasing yearly by about a million, but the amount of food produced in the country is not enough to feed them. Besides, the arable land in the country is so small and limited that hardly any space is left to effect any further increase, and the only method left, beyond extending abroad, is to increase the yield of crops through intensive farming. For this fertilizers are necessary

and the demand has steadily been increasing. The consumption of fertilizers during 1930 was valued at ¥526,685,000, of which ¥282,470,000 were self-supplied fertilizers, while ¥244,215,000's worth were bought in the market.

General Condition of the Industry

Of all the chemical fertilizers, superphosphate of lime and sulphate of ammonia are the two representative ones, and because of the largeness of their demand and supply the market trend of these two is practically the market trend of the rest.

Superphosphate of Lime The principal raw material for the manufacture of superphosphate of lime is phosphate rock. During 1930 some 570,000 tons were imported, while some 63,385 tons were produced at home, and during 1933 and 1934 imports were 698,234 and 671,533 tons respectively. This rock is imported from U. S. A., Egypt, and the South Sea Islands.

Superphosphate production has been gaining steadily and last year its production is estimated at 1,125,000 tons. Production during the past few years is reported by the Ministry of Commerce and Industry as follows:

PRODUCTION OF SUPERPHOSPHATES
(In metric tons)

1929	408,971
1930	424,484
1931	898,887
1932	1,037,730
1933	1,127,977
1934 (estimate)	1,125,000

The superphosphate market was depressed throughout the year due to rural depression, higher prices of raw materials, and constant disputes between the Union of Superphosphate Distributors and its outsiders.

Low exchange and conclusion of the International Phosphate Agreement last year together acted to pull up prices of phosphate rocks and finished products. Domestic production capacity is rated at about 1,955,000 tons a year about 45 per cent. of which is, however, curtailed. Production in recent years runs between 1,120,000 and 1,230,000 tons.

Fluctuations in the market price of superphosphate during 1933 and 1934 were as follows:

PRICE OF SUPERPHOSPHATE, 1933, 1934
(The price is per bag of 7.5 kan.)

	1933		1934	
	High	Low	High	Low
January	¥1.20	1.15	1.15	1.13
February	1.20	1.15	1.17	1.15
March	1.08	1.05	1.17	1.16
April	1.05	1.04	1.16	1.16
May	1.05	.95	1.16	1.15
June	1.05	1.00	1.15	1.14
July	.95	.90	1.14	1.14
August	.90	.88	1.11	1.10
September	.98	.88	1.14	1.10
October	1.08	.98	1.13	1.12
November	1.12	1.08	1.12	1.10
December	1.15	1.13	1.12	1.11

Sulphate of Ammonia The demand for sulphate of ammonia has steadily increased for years. Consumption in 1930 was 488,000 tons, in 1931 it showed a remarkable increase to 618,000 tons. Imports in 1930 were 302,905 tons (value ¥29,612,000), in 1931 they decreased to 224,148 tons and in 1932 a decrease to 119,000 tons was witnessed, value being ¥15,861,000 and ¥7,035,000 respectively. The decrease in imports was made good by the increase in domestic production, which in 1931 was 393,237 tons, while in 1932 it increased to 604,235 tons, to 719,000 tons in 1933 and to 735,000 tons in 1934. Japan, in this manner, has become self-supporting in sulphate of ammonia, and has become very uneasy regarding overproduction in the future.

In Europe and America, the International Nitrogen Conference failed to relieve various countries from the pressure of overproduction, and these countries, in 1931, tried to dump their stocks in the Orient, especially in Japan, thereby causing the price of sulphate to sharply decline.

Ammonium sulphate production has been rising remarkably in the past several years, especially since the fall of the yen made competition by foreign fertilizers more difficult. Last year output rose to 735,000 tons. In 1932 it had registered the biggest advance in its history, jumping from the 393,237 tons of 1931 to 604,235. Last year showed a total more than nine times as great as that of 1920. Figures follow:

AMMONIUM SULPHATE PRODUCTION
(In tons)

1920	80,100
1925	131,138
1926	147,000
1927	176,475
1928	232,425
1929	234,609
1930	265,826
1931	393,237
1932	604,235
1933	713,550
1934	735,000

The following table shows producers of sulphate of ammonia with their capacities of production:

PRODUCTION CAPACITY OF AMMONIUM SULPHATE IN 1935

Companies	(in tons)		
	Present capacity	Capacity to be increased in 1935	Total production capacity
Nippon Chisso	11,000	—	110,000
Dai Nippon Art. Fert.	50,000	—	50,000
Denki Kagaku	100,000	—	100,000
Mijké Chisso	47,500	47,500	50,000
Showa Fert.	220,000	—	220,000
Sumitomo Fert.	120,000	30,000	150,000
Ube Chisso	50,000	50,000	100,000
Claude Chisso	5,000	—	5,000

Companies	Present capacity	Capacity to be increased in 1935	Total production capacity
Daido Fert.	6,000	—	6,000
Hokuetsu Hydro.	9,000	—	9,000
Toyo High Pres.	—	150,000	150,000
Total	717,500	277,500	995,000
Gas Companies	11,000	—	11,000
Steel Works	11,000	—	11,000
Mitsui Mines	3,200	—	3,200
Kamaishi Mines	1,800	—	1,800
Wanishi Steel	1,500	—	1,500
Total	28,500	—	28,500
Japan proper total	746,000	277,500	1,023,500
Chosen Chisso	420,000	—	420,000
Mitsubishi Steel	2,400	—	2,400
Chosen total	422,400	—	422,400
Manchuria Chemical	—	180,000	180,000
Grand total	1,168,400	457,500	1,625,900

The gains made by ammonium sulphate are due to the fact that it has gained the reputation as the fastest working fertilizer sold here, since it is quickly absorbed into the soil of both paddy and upland fields and is effective for all kinds of cereals and vegetables except legumes. Since the World War it has been encroaching upon the field of bean cake, also a nitrate fertilizer. Foreign ammonium sulphate dominated the market until a few years ago and the domestic industry hardly got going. The lower yen aided it and this year's output is expected to be well above 1,100,000 tons. In spite of the fact that all domestic fertilizer companies have been operating at capacity in ammonium sulphate, Japan expects to have a deficit of 120,000 to 130,000 tons for the 1934 fertilizing year (August, 1934, to July, 1935), according to the Ministry of Commerce and Industry. Supply and demand figures follow:

AMMONIUM SULPHATE DEMAND AND SUPPLY			
(In 1,000 tons)			
SUPPLY:	1933	1934	
Brought over from previous year	107	72	
Estimated production	829	880	
Imported	61	11	
Supply total	997	1,063	

DEMAND:	1933	1934
Estimated consumption	996	1,080
Exported	32	—
Brought over to next year	0	110
Demand total	1,028	1,190

SULPHATE OF AMMONIA PRICES, 1933-34				
Domestic product per 10 kan bag *				
	1933		1934	
	High	Low	High	Low
January	3.90	3.73	3.45	3.45
February	3.85	3.64	3.55	3.45
March	3.74	3.45	3.60	3.50
April	3.58	3.55	3.61	3.55
May	3.88	3.35	3.75	3.61
June	3.60	3.39	3.78	3.58
July	3.63	3.35	3.60	3.55
August	3.35	3.35	3.47	3.44
September	3.35	3.33	3.45	3.43
October	3.33	3.33	3.48	3.45
November	3.50	3.33	3.45	3.42
December	3.45	3.44	3.51	3.45

* 27 bags of the domestic product constitute a ton.

Cyanamide While cyanamide was a fertilizer difficult to make farmers use it, they now recognize the merit of this nitrogenous fertilizer, and owing perhaps to its reasonableness in price, its consumption increased with a great stride. In 1931 its consumption was 168,448 tons, in 1932 180,583 tons, and in 1933 223,409 tons. Production increased rapidly too. While, in 1924, it barely amounted to about 30,000 tons, it increased up to 278,825 tons in 1933, almost ten times as large. The following table shows this:

PRODUCTION OF CYANAMIDE		
(Unit in metric ton and in yen)		
Year	Quantity	Value
1924	29,981	4,510,707
1925	49,662	3,183,625
1926	97,107	8,353,940
1927	64,981	6,146,775
1928	65,190	6,311,975
1929	211,593	17,355,508
1930	205,572	16,649,704
1931	195,018	9,747,662
1932	283,396	16,700,175
1933	278,825	19,934,167

Sales are made through the joint sales association. Through the control of this association, and also with the increased demand, the cyanamide market in 1934 was kept firm. From August the article was sold out at a reduced price, since with that month the new fertilizer season of 1934-1935 began. The average monthly price of cyanamide in 1934 follows:

PRICE OF CYANAMIDE, 1934			
(20% ingredient 6 kwan net per bag)			
Jan.	Feb.	Mar.	Apr.
¥1.75	1.80	1.80	1.82
May	June	July	Aug.
¥1.83	1.80	1.80	1.65
Sept.	Oct.	Nov.	Dec.
¥1.65	1.67	1.65	1.67

Vegetable Fertilizers Vegetable fertilizers are many in kind. Bean cake, rape-seed cake, cotton-seed cake, rice bran, etc., come into this class of fertilizers, bean cake being the most important. Supplies and consumption for 1933 were:

SUPPLY AND DEMAND OF VEGETABLE FERTILIZERS, 1933
(in ton)

	Production at home	Imports	Exports	Consumption
Bean cake	244,763	530,953	2,319	770,029
Rape-seed cake	74,100	43,394	—	73,800
Cotton-seed cake	28,500	64,649	—	67,900

The domestic production of bean cake is very small when compared with the quantity imported, the greater part of which comes from Manchoukuo. In 1912 the consumption of bean cake, rape-seed cake, and cotton-seed cake was 34,640 tons, which, by 1921, increased to over a million tons, but since then no increase can be noted as the development of the synthetic nitrogen industry has cut deeply into the development of vegetable fertilizer industry.

A piece of a bean cake weighs 46 kin, or 7.4 kan. The average price of one piece was as high as ¥2.29 in 1926, whereas in 1933, the highest price was ¥1.18 and the lowest ¥0.95, a demonstration of the depressed state of the fertilizer market.

Owing to great bumper crops of soy beans in Manchoukuo in 1933, their production being estimated at 4,600,000 tons, an increase of 900,000 tons over 1932, sales of soy bean cakes revived to a great extent in 1934, and the market was firm, though in the latter part of the year

demand contracted owing to crop failures in Japan. In spite of that import amounted to 6,795,000 pieces, a gain of 1,324,000 pieces over 1933. Market prices for 1934 follow:

MARKET PRICES OF BEAN CAKES
IN 1934

	(in yen)		
	On 1st	On 11th	On 21st
January (On the 4th)	2.99	2.94	3.00
February	3.07	3.19	3.17
March	3.13	3.12	3.05
April	2.98	3.08	3.10
May	3.01	3.12	3.15
June	3.10	2.93	2.90
July	2.88	2.91	3.05
August	3.21	3.45	3.35
September	3.44	3.44	3.57
October	3.87	3.84	3.74
November	3.58	3.61	3.50
December	3.58	3.70	3.62

Fish and Animal Fertilizers In Japan fish is indispensable as food, but at the same time they are caught for oil extraction and the refuse is converted into manure. The consumption of fish and animal fertilizers is as shown in the tables attached at the end of this article.

In addition to chemical, vegetable and animal fertilizers, a great quantity of self-supplied fertilizers are supplied and consumed, the figures for which are given also in statistics attached at the end of this subject.

1934 Fertilizer Industry

Trend in General 1933 rice bumper crops increased purchasing power of farmers in general, which was reflected in good sales of fertilizers in the earlier part of the year, and the industry was active. However, the yield of agricultural crops in 1934 proved to be extremely poor, and the sales of fertilizers in the latter part of the year was not as good as expected.

According to statistics of Finance Ministry, imports of principal fertilizers in 1934 are as given below, which show an increase both in quantity and value. Organic fertilizers, consumption of which once showed a decreasing tendency, indicated a gain, this being especially the case with bean cakes, which attracted

attention. This was due, however, to a great yield of soy beans in Manchoukuo in 1933.

IMPORT OF PRINCIPAL FERTILIZERS (In kin)

	1933	1934	Increase in 1934
Sulphate of potash	890,000	815,000	425,000
Nitrate of soda	582,000	603,000	81,000
Bone meal	402,000	476,000	74,000
Bean cakes	8,993,000	10,767,000	1,774,000

As to the amount of production in 1934 it is not available yet, but the Ministry of Commerce and Industry gives a tentative report on the production of the three principal chemical fertilizers as follows:

Superphosphate of lime	1,073,619 tons
Sulphate of ammonium	802,205 "
Cyanamide	139,662 "

Statistics

Production, imports, exports, and consumption of various kinds of fertilizers are to be found in the following tables:

THE VALUE OF FERTILIZERS PRODUCED IN JAPAN PROPER 1929-1933 (Unit ¥1,000)

Year	Fertilizers which requires a licence for production					Fertilizer not requiring any licence for production	Total
	Animal	Vegetable	Chemical	Mixed	Miscellaneous		
1924	21,830	37,290	54,320	36,170	140	26,000	175,760
1925	26,500	41,660	64,380	45,940	170	26,000	204,670
1926	24,010	46,560	69,710	42,990	200	26,000	209,470
1927	21,139	37,039	70,423	41,820	165	26,000	196,585
1928	22,254	39,667	82,483	53,112	318	26,000	221,834
1929	19,619	43,521	87,284	60,116	217	26,000	236,757
1930	12,703	30,061	76,953	38,551	62	26,000	184,330
1931	13,092	24,083	61,557	25,910	85	26,000	150,727
1932	19,678	25,806	81,798	30,659	48	26,000	183,989
1933	25,891	31,563	102,026	42,408	48	26,000	227,936

PRODUCTION OF VEGETABLE FERTILIZERS IN JAPAN PROPER CLASSIFIED ACCORDING TO KINDS 1924-1933 (Value in ¥1,000)

Year	Bean cake		Rape-seed cake		Cotton-seed cake	
	Quantity tons	Value	Quantity tons	Value	Quantity tons	Value
1924	214,950	20,810	66,263	8,010	14,133	1,400
1925	233,813	24,300	69,375	8,180	21,413	2,120
1926	270,413	26,600	103,813	11,070	29,625	2,590
1927	230,175	19,542	98,700	9,572	29,325	2,022
1928	243,750	21,068	79,425	9,088	32,250	2,622
1929	268,002	23,633	93,762	9,449	50,053	3,973
1930	232,727	16,505	99,433	7,367	43,459	2,321

Year	Bean cake		Rape-seed cake		Cotton-seed cake	
	Quantity tons	Value	Quantity tons	Value	Quantity tons	Value
1931	279,265	12,278	102,588	6,372	25,879	1,068
1932	221,369	11,726	79,117	6,516	19,809	1,206
1933	244,763	16,986	74,105	6,532	28,551	1,887

PRODUCTION OF ANIMAL FERTILIZERS IN JAPAN PROPER CLASSIFIED ACCORDING TO KINDS 1924-1933. (Value in ¥1,000, quantity in tons.)

Year	Herring		Sardine		Dried sardine		Powdered fish meal		Bone meal	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	32,100	5,080	40,163	5,900	9,938	1,270	10,897	1,560	31,425	3,770
1925	44,775	7,690	42,000	6,600	4,950	570	13,262	2,088	34,763	4,310
1926	40,988	6,620	44,475	6,220	8,438	840	12,469	1,824	36,413	4,150
1927	46,200	6,597	34,163	4,154	1,888	128	16,038	2,003	33,038	3,493
1928	26,813	3,679	46,350	5,931	16,388	1,155	26,303	3,075	33,600	3,492
1929	12,013	1,687	55,286	5,461	12,494	865	20,252	2,870	37,352	3,691
1930	19,663	1,740	42,277	2,979	4,969	293	25,161	2,044	34,234	2,467
1931	22,114	1,230	77,100	4,208	8,759	309	44,140	3,014	28,908	1,790
1932	28,468	1,987	124,548	7,687	16,449	827	48,439	3,918	27,492	2,071
1933	30,201	2,770	141,301	9,418	16,450	720	82,111	7,010	26,168	2,021

PRODUCTION OF CHEMICAL FERTILIZERS IN JAPAN PROPER CLASSIFIED ACCORDING TO KINDS 1924-1933. (Value in ¥1,000, quantity in tons.)

Year	Sulphate of ammonia		Cyanamide		Superphosphate of lime		Sulphate of potash	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	108,713	18,310	121,688	12,240	593,325	22,320	713	80
1925	131,133	24,630	125,325	11,230	673,900	26,420	75	10
1926	147,000	23,030	140,663	11,960	786,263	28,870	563	60
1927	176,475	22,470	120,413	10,833	934,838	32,897	75	8
1928	232,425	29,622	159,938	15,051	926,175	32,256	600	71
1929	234,609	30,062	161,157	15,959	947,204	31,242	68	6
1930	265,826	23,936	228,333	16,959	957,159	29,330	207	24
1931	393,237	25,422	168,042	8,743	862,401	22,952	36	3
1932	459,663	36,126	180,583	10,660	1,041,497	29,219	203	34
1933	471,398	41,151	223,409	15,159	1,116,573	33,148	182	23

Year	Muriate of potash		New fertilizers		Mixed fertilizers	
	Quantity	Value	Quantity	Value	Quantity	Value
1924	4,302	394	—	—	413,133	36,170
1925	3,895	355	—	—	480,825	45,940
1926	4,932	420	—	—	493,538	42,990
1927	6,163	536	—	—	532,725	41,820
1928	5,203	440	64,439	3,706	680,813	53,112
1929	5,325	406	121,320	9,484	777,287	60,116
1930	5,197	404	82,044	5,126	627,141	38,551
1931	8,005	592	56,024	3,243	546,623	25,910
1932	8,373	764	104,321	4,871	616,823	30,659
1933	9,979	871	167,522	11,637	710,086	42,408

IMPORTS OF PRINCIPAL FERTILIZERS 1924-1934 (in tons.)

Year	Bone meal	Bean cake	Rape-seed cake	Cotton-seed cake	Nitrate of soda	Sulphate of ammonia	Cyanamide
1924	43,163	1,118,238	90,188	42,525	40,425	168,897	—
1925	43,050	1,010,250	86,325	62,700	38,025	203,550	—
1926	36,600	1,266,638	98,363	57,938	63,975	295,025	2,800
1927	37,613	1,185,863	64,800	60,263	55,463	250,014	7,110
1928	36,000	981,563	88,200	52,163	52,650	284,475	2,757
1929	40,007	831,857	69,635	58,575	88,567	390,658	14,757
1930	30,217	889,743	48,039	82,125	30,575	302,905	3,575
1931	37,119	1,032,630	54,380	64,072	34,994	224,148	406
1932	32,062	629,407	69,686	21,718	23,757	118,735	—
1933	24,126	539,586	44,175	65,789	34,902	108,444	—
1934	28,113	635,983	34,697	82,849	39,184	158,333	—

Year	Sulphate of potash	Muriate of potash	Ammono-phos	Leuna-phos	Animal bones	Phosphate rocks
1924	12,900	—	—	—	32,666	265,088
1925	21,788	—	3,078	—	33,713	276,525
1926	26,775	5,695	8,829	—	37,125	406,763
1927	31,650	13,081	17,542	—	31,500	407,250
1928	35,100	22,099	37,715	3,378	31,800	473,325
1929	54,203	27,591	34,121	26,795	32,062	559,071
1930	67,917	23,911	20,112	4,584	25,561	570,297
1931	38,510	23,470	13,564	—	25,751	412,016
1932	18,698	14,181	—	—	19,663	559,418
1933	23,881	9,777	—	—	22,334	703,686
1934	48,114	45,149	—	—	24,230	671,929

IMPORTS OF FERTILIZERS FROM THE COLONIES (In tons)

Year	From Korea				Sulphate of ammonia
	Rice bran	Fish guano	Dried fish	Bean cake	
1924	47,736	4,875	2,213	36,713	38
1925	49,875	10,725	1,536	10,313	—
1926	36,863	22,463	1,838	46,050	—
1927	41,138	33,638	638	20,025	—
1928	66,750	40,725	413	7,200	—
1929	53,480	52,216	186	29,152	—
1930	37,265	56,467	359	17,451	18,063
1931	58,031	36,283	505	17,960	53,260
1932	74,563	48,489	929	9,394	125,123
1933	69,040	38,393	371	27,573	83,722

Year	Herring guano	From Saghalien Island		From Formosa Fertilizers
		Sardine guano	Cod guano	
1924	19,838	—	900	3,563
1925	19,425	—	825	1,275
1926	26,025	4,746	—	977
1927	30,000	7,095	—	5,403
1928	44,738	6,921	675	6,117
1929	42,794	5,217	371	8,163
1930	37,207	10,864	662	2,523
1931	65,904	9,369	277	5,753
1932	54,094	9,960	604	6,990
1933	35,692	2,677	629	5,330

EXPORTS OF FERTILIZERS (In tons)

Year	Domestic products		Foreign products re-exported				
	Various cakes	Chemical fertilizers	Various cakes	Nitrate of soda	Sulphate of ammonia	Sulphate of potash	Muriate of potash
1924	9,774	222	—	1,825	524	—	—
1925	9,037	3,586	166	1,834	466	—	—
1926	13,452	1,090	33	464	4,202	—	—
1927	13,246	1,373	210	3,005	774	56	—
1928	25,513	2,158	3,307	4,418	2,431	83	227
1929	35,495	5,200	1,010	4,052	1,858	92	—
1930	10,558	21,463	1,252	2,672	551	59	—
1931	14,632	41,981	474	1,648	1,653	2,977	—
1932	22,492	43,960	259	1,052	—	5,011	—
1933	21,093	63,098	1,215	1,988	457	908	80

EXPORTS OF FERTILIZERS TO COLONIES (In tons)

Year	Sulphate of ammonia	To Korea		Various cakes
		Artificial fertilizers, etc.		
1924	6,208	7,802	584	
1925	14,945	14,859	294	
1926	29,797	19,579	519	
1927	32,364	34,895	876	
1928	50,129	50,144	1,237	
1929	78,618	69,891	871	
1930	62,631	94,524	167	
1931	22,538	53,744	1,498	
1932	17,749	83,225	1,750	
1933	21,893	113,859	1,182	

Year	Bean cake	Superphosphate of lime	To Formosa			Mixed fertilizers
			Sulphate of ammonia	Nitrate of soda	Sulphate of potash	
1924	467	27,255	16,685	245	—	20,745
1925	7	34,054	15,576	612	—	15,639
1926	26	33,776	9,481	349	—	9,976
1927	390	39,948	8,107	308	—	6,941
1928	2,028	41,993	7,792	289	1,456	10,986
1929	881	38,968	14,873	144	846	9,874
1930	1,136	35,095	21,241	152	789	12,068
1931	—	32,115	18,857	—	581	18,448
1932	—	41,803	49,491	—	877	22,892
1933	—	50,108	40,351	—	940	35,444

CONSUMPTION OF VARIOUS FERTILIZERS IN JAPAN PROPER

(Unit in ¥1,000)

Year	Herring guano		Sardine guano		Dried sardines		Bone meal	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	51,938	8,900	41,888	6,080	12,150	1,540	75,188	8,210
1925	64,200	11,560	43,763	6,890	6,525	800	78,188	8,920
1926	67,018	11,220	49,238	6,880	10,275	1,080	73,388	7,900
1927	76,200	11,260	41,250	5,140	1,388	130	70,725	6,950
1928	71,550	10,270	53,288	6,990	16,388	1,150	69,675	6,900
1929	54,807	8,362	60,503	6,103	12,494	865	77,317	7,539
1930	56,875	5,474	53,141	3,821	4,969	293	64,455	4,744
1931	88,018	6,163	86,469	4,741	8,759	309	66,099	3,830
1932	82,562	6,392	134,508	8,253	16,449	827	59,744	4,249
1933	65,893	6,677	143,978	9,635	16,480	720	50,294	3,786

Year	Bean cake		Rape-seed cake		Cotton-seed cake	
	Quantity	Value	Quantity	Value	Quantity	Value
1924	1,290,788	107,300	128,025	11,790	45,975	4,160
1925	1,185,525	110,750	115,950	11,220	63,075	5,980
1926	1,510,088	133,220	142,463	12,430	58,383	5,260
1927	1,359,225	103,080	102,525	8,390	60,713	4,830
1928	1,162,163	88,870	116,325	11,090	52,725	4,360
1929	1,066,580	85,169	104,369	8,800	61,174	4,992
1930	1,087,476	71,986	86,096	5,615	82,438	5,051
1931	1,278,724	48,917	92,910	4,834	65,176	2,313
1932	813,983	37,844	100,717	6,457	22,548	1,379
1933	770,029	49,515	73,832	5,173	67,902	3,950

Year	Superphosphate of lime		Nitrate of soda		Sulphate of ammonia	
	Quantity ton	Value	Quantity ton	Value	Quantity ton	Value
1924	565,875	20,920	40,200	5,220	254,250	40,970
1925	636,263	24,570	37,388	5,060	303,713	51,910
1926	751,425	27,150	63,162	8,347	399,545	60,103
1927	894,225	31,040	52,155	6,225	385,243	48,871
1928	884,182	30,447	47,943	5,445	455,548	57,330
1929	908,239	29,603	84,371	9,544	319,921	65,553
1930	922,064	28,495	27,751	2,838	488,000	45,923
1931	808,109	21,238	33,346	2,570	617,642	41,237
1932	960,497	26,534	22,705	1,943	618,125	46,541
1933	1,009,722	29,673	32,914	3,659	551,264	48,885

Year	Cyanamide		Sulphate of potash		Mixed fertilizers	
	Quantity ton	Value	Quantity ton	Value	Quantity ton	Value
1924	121,688	12,240	13,613	1,470	392,363	33,790
1925	122,288	11,280	21,863	2,690	465,183	44,330
1926	143,463	12,240	27,313	3,410	463,988	40,710
1927	127,523	11,487	31,669	4,240	525,788	41,150
1928	162,695	15,282	34,156	4,360	669,825	52,020
1929	175,914	16,502	53,334	6,557	767,613	59,187
1930	231,958	17,237	67,276	7,628	615,083	37,616
1931	168,448	8,769	34,988	3,940	528,175	24,697
1932	180,583	10,660	18,013	1,421	593,936	29,150
1933	223,409	15,159	21,715	3,719	674,642	39,674

CONSUMPTION OF SELF-SUPPLIED FERTILIZERS IN JAPAN PROPER

(in 1,000 tons and ¥1,000)

Year	Farm-yard manures		Green manures		Night soil		Others		total	
	Q'ty	Value	Q'ty	Value	Q'ty	Value	Q'ty	Value	Q'ty	Value
1924	21,495	142,540	6,193	37,520	16,036	88,620	7,798	77,290	51,519	345,970
1925	21,723	140,540	5,898	35,520	15,869	85,470	8,244	81,280	51,736	342,810
1926	21,587	138,610	6,431	36,160	16,044	85,450	7,943	79,300	52,004	339,520
1927	22,343	139,580	5,486	32,170	15,905	83,270	8,825	79,720	52,553	334,740
1928	22,018	131,270	6,168	34,040	16,251	84,100	8,127	76,880	52,564	326,290
1929	22,820	143,390	6,219	34,230	16,308	77,340	8,383	79,290	53,780	334,250
1930	23,506	122,690	6,133	29,130	16,236	61,330	8,942	68,820	54,317	292,470
1931	25,312	113,510	6,391	25,810	16,164	51,610	11,537	60,350	59,407	251,280
1932	26,930	121,780	6,513	25,730	16,012	51,500	9,474	61,270	58,931	260,270
1933	29,630	144,200	6,855	26,630	15,672	53,680	9,600	73,390	61,758	297,900

TOTAL CONSUMPTION OF FERTILIZERS IN JAPAN PROPER (unit in ¥1,000)

Year	Manufactured under license	Fertilizers sold on the market			Self-supplied fertilizers	Grand total
		Manuf'd without license	Quantity imported	Raw materials for mfg. fertilizers		
1924	149,760	27,000	146,129	53,446	268,443	614,413
1925	178,070	26,000	155,882	50,897	309,655	632,465
1926	183,400	26,000	190,914	60,760	339,624	679,144
1927	170,585	26,000	150,754	57,520	289,819	624,559
1928	197,334	26,000	141,296	69,824	295,806	621,506
1929	210,750	26,000	156,597	77,265	316,069	650,339
1930	158,330	26,000	110,333	50,508	244,215	526,635
1931	124,727	26,000	74,028	39,437	185,318	480,598
1932	157,969	26,000	56,690	44,907	195,772	456,042
1933	201,936	26,000	57,824	62,936	222,824	520,724

NUMBER OF PERSONS ENGAGED IN THE FERTILIZER BUSINESS

Year	Manufacturers of fertilizers	Importers of fertilizers	Importers of fertilizers from colonies	Persons engaged in the purchase and sale of fertilizers
1925	23,383	1,128	415	45,956
1926	23,699	1,124	429	46,127
1927	23,818	1,154	446	45,975
1928	23,822	1,146	437	45,895
1929	23,924	1,132	436	45,644
1930	23,564	1,105	432	45,098
1931	23,334	1,072	428	43,913
1932	23,218	1,052	434	42,131
1933	23,083	1,035	453	41,514

Cement

History

In 1871, cement works were established by the Government in Fukagawa District in Tokyo. This was the origin of the cement industry in Japan. For ten years the works gradually expanded so that by 1891, the total capital invested in the industry was ¥1,000,000, the works numbered ten and the capacity was about 300,000 barrels a year.

In 1898, there were sixteen works with an aggregate capacity of 1,000,000 bbls, and imports were entirely excluded. In 1912, there were nineteen companies and twenty three mills. The total capital invested amounted to ¥18,000,000 while the capacity had increased to 4,000,000 bbls.

During the World War, the industry enjoyed unprecedented prosperity and expanded rapidly. New companies were formed and new mills added. At the end of 1926, companies numbered twenty-one with thirty four mills, the total authorized capital was ¥118,000,000 of which ¥85,000,000 was paid up, and the total production capacity had increased to 17,500,000 bbls.

During the last twenty years, demand for cement increased every year with five exceptions, there was a 2% decrease in 1912 and a 10%

in 1915 and 1919. The average rate of increase was about 11%. But in 1930, domestic consumption suddenly decreased by 12%, the first time that any such sharp decrease had ever been experienced. The decrease was due to the general depression and the economic retrenchment policy of the Government following the removal of the gold embargo in January, 1930. In 1931, there was a further decrease, but in 1932, with general activity in industry being felt, there was some recovery over the previous two years.

TABLE SHOWING GROWTH OF CONSUMPTION OF CEMENT

(- shows decrease)

Year	Domestic consumption bbls	Percentage of increase or decrease
1912	3,253,495	- 2%
1913	3,530,084	9
1914	3,596,526	2
1915	3,234,644	- 10
1916	4,065,265	26
1917	4,951,142	22
1918	5,844,648	18
1919	5,256,865	- 10
1920	6,598,602	26
1921	8,091,716	23
1922	10,430,941	92
1923	11,664,285	12
1924	12,674,662	9
1925	13,332,198	6
1926	16,733,840	25
1927	18,803,080	12
1928	20,565,624	9
1929	21,786,073	6

Year	Domestic consumption	Percentage of increase or decrease
1930	19,103,865	- 12
1931	18,087,580	- 5
1932	19,529,955	7
1933	4,022,800 metric ton	-
1934	3,856,100	- 4

The Industry in Recent Years

For some years in the past, the interest of cement industry in Japan centred on the question of the adjustment of over-extended capacity of production. The result is a large curtailment of production.

In 1925 capacity was about 50 per cent. larger than the output, which became almost 100 per cent. in 1934. In recent years the greatest consumption of cement, including domestic consumption and export, was 480,000 tons of May, 1934, while the production capacity at the end of November of the same year was 1,020,000 tons a month. For almost a year 57 per cent. of the Cement Association's (Cement Rengokai) capacity has been curtailed.

The cause of this abnormal condition of the industry is found in the fact that in fixing production curtailment ratio of the member companies of the Rengokai, it has been based on the capacities of production of the members. This led the member companies to expand capacities to get larger shares of business. The situation culminated

in the latter part of 1934 in forcing the Department of Commerce and Industry to apply the Major Industries Control Law to the cement industry.

Statistics Statistics for the capacity of production, actual production, output of cement classified by uses and export of the same classified by destinations follow:

PRODUCTION CAPACITY AND ACTUAL PRODUCTION OF CEMENT

(in 1,000 metric tons)

Year	Production capacity at the end of Nov.	Actual production in the year
1925	3,294	2,508
1926	3,549	3,206
1927	3,948	3,575
1928	4,296	3,872
1929	5,290	4,349
1930	5,934	3,748
1931	6,502	3,615
1932	6,933	3,731
1933	8,513	4,781
1934	10,020	5,018

PRODUCTION OF CEMENT CLASSIFIED BY USES

Uses	(in 1,000 metric tons)		
	1932	1933	1934
Railways	321.9	364.5	305.2
Electric works	115.2	159.0	226.5
Harbours	114.4	202.0	188.6
Roads and bridges	426.7	488.1	385.7
Other public works	355.4	445.8	353.7
Buildings	685.8	927.1	954.3
Mining	30.2	47.2	59.4
Retails	1,173.2	1,226.6	1,379.5
Cement products	78.3	1,000.5	125.2
Miscellaneous	19.9	20.2	16.1
Total	3,586.2	3,981.3	3,887.0

EXPORTS OF CEMENT

(Quantity in tons and value in ¥1,000)

Descriptions	1931		1932		1933		1934	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
Manchoukuo	62	1	11,555	253	10,521	205	9,016	168
Kwantung Province	5,342	113	15,471	299	38,567	1,824	221,088	4,119
China	21,991	482	16,722	340	25,720	395	22,662	263
Hongkong	125,445	2,553	108,358	2,040	88,515	1,214	62,285	668
British India	52,787	1,038	70,274	1,307	65,733	949	34,242	418
Straits Settlements	87,063	1,800	39,805	823	40,481	597	65,240	764
Dutch East Indies	106,207	2,198	136,324	2,600	87,646	1,368	52,564	667
Philippines	15,892	322	13,322	258	3,850	71	2,022	26
Others	28,804	578	33,732	615	53,209	768	70,841	939
Total	445,638	9,089	445,567	8,545	474,245	7,394	539,905	8,088

1934 Cement Industry

Demand and Supply Conditions The industry was very prosperous in 1934 following close to the unprecedented boom in the previous year. Causes of prosperity of 1933 were found in the farm relief work and industrial activities caused by inflation policy of the Government. The relief works were continued throughout 1934, and various industries were active, so that the consumption of cement was good too. The damage done to Kwansai districts by the typhoon in the fall created a new demand for cement, by which the industry made an unexpected profit. At the Special Session of the Diet a budget calling for ¥66,000,000 for 1935 and ¥70,000,000 as supplementary budget for 1934 were appropriated for reconstruction works in Kwansai districts. Since the major parts of reconstruction expenses would be consumed by construction works of harbours and buildings, the industry would no doubt further profit thereby.

The output for domestic consumption in 1934 was 3,887,000 tons which showed a decrease of about 90,000 tons as compared with the

output of 3,977,000 tons for 1933. But this does not mean a decrease in consumption. New outsiders of the cartel, which came to market their product, viz.: Nitto, Hinode, Kyushu Industrial, and Taihei Companies put up about 30,000 tons a month, which reduced the output of member companies of the Rengokai.

Export to Manchoukuo totalled 437,000 tons, showing a surprising gain of 40 per cent. over 313,000 tons of 1933. The increase of demand in that country may be due to industrial development there and also to some military reason. But, as explained later in this article, the country is going to become self-supplying with regard to supply of cement, perhaps from the middle of 1935, and the export in the year 1934 may be taken to have reached its peak.

Exports to countries other than Manchoukuo were not so good, owing to the inactivities of the Japan Cement Export Guild. Exports totalled about 320,000 tons and showed a decrease of about 70,000 tons as compared with 1933. This must be partly attributed to the fact that foreign countries tried to restrict our exports.

DEMAND AND SUPPLY OF CEMENT IN 1934 BY MONTH

(In tons)

	Production	Domestic market	Export to Manchoukuo	Export to other countries	Stock in warehouse
January	292,402	255,122	32,981	23,362	210,211
February	354,888	270,382	33,812	33,044	224,917
March	426,957	358,713	28,164	27,112	233,288
April	420,009	352,809	32,060	22,961	249,304
May	426,588	408,333	46,748	25,900	194,024
June	376,984	296,049	47,323	23,145	199,989
July	380,517	294,713	37,756	24,188	215,283
August	389,343	326,842	40,858	29,804	200,858
September	372,323	323,616	44,647	28,400	167,122
October	441,266	375,398	57,846	31,676	135,680
November	437,115	361,384	33,407	32,797	141,500
December	301,002	269,508	1,518	17,565	132,816

RATE OF CURTAILMENT
OF PRODUCTION

Month	(in %)	
	1933	1934
January	55	52
February	55	52
March	50	52
April	50	52
May	40	52
June	50	52
July	50	57
August	50	57
September	44	57
October	50	57
November	50	57
December	52	57

The Industry Under Major Industries Control Law Examinations of conditions of increase of monthly production capacities of companies which belong to the Cement Rengokai reveal that capacity of 551,000 tons at the end of June, 1932, increased to 638,000 tons and to 791,000 tons in the corresponding periods of 1933 and 1934 respectively, and the actual production was curtailed up to 57 per cent.

The Department of Commerce and Industry became keenly conscious as to future predicaments which might be brought in by such over-expanded capacities. As the Department found it difficult to make members of the Rengokai and the outsiders stop expansion of capacity on their own accord, it finally resorted to the application of the Major Industries Control Law to stop increase of capacity for a year, to make the outsiders join the Rengokai, and to reduce the price of cement and the law became effective on November 29, 1934.

Formation of New Rengokai As the term of the old Rengokai expired in November, 1934, the New Rengokai was formed to succeed the old one, the term of which will run to November, 1944. The New Rengokai will be invested with authority to control both production and

sales of the member companies starting from March 1, 1935. It was also agreed that in order to measure the actual output more correctly it would make restrictions on production based on quantity instead of on time.

Though Onoda, Oita and Denki Kagaku Co., Ltd. did not join the New Rengokai, four of Hinode, Nitto, Kyushu Industrial, and the Dai Nippon Artificial Fertilizer Co., Ltd. which used to be outsiders, joined the Rengokai, so that its members now number seventeen.

Manchurian Market Export of cement to Manchoukuo in 1934 was 437,000 tons and showed a gain of 124,000 tons over that of 1933. Though the demand in that country may no doubt increase hereafter, the country is becoming fast self-sufficient as regards the supply of cement. Out of 174,500 tons of cement which was required by the South Manchuria Railway Co., Ltd. more than one half of the quantity was sold by Manchurian Cement, Daido Cement, Fushun Cement, Harbin Cement, Anshan Cement Co., which shows the rapid development of the cement industry in the country. In addition to the above, mills established by Onoda Co., Ltd. in colonies will put up their products to the country, and the cement manufacturers of Japan proper will lose the market by so much.

Market in General The cement market was firm for the first half of the year. Toward the close of the year, however, it showed weakness owing to the Government's suggestion to cut price and also to the tender invited by the Department of Railways in which the Onoda group was successful in offering lower price. The trend of the market follows:

CEMENT WHOLESALE PRICE IN RECENT YEARS BY MONTH
(Per bag of 50 kg F.O.B. Tokyo Factory in yen)

	1931	1932	1933	1934
January	1.20	1.20	1.20	1.16
February	1.20	1.20	1.20	1.16
March	1.20	1.20	1.20	1.16
April	1.20	1.20	1.20	1.16
May	1.20	1.20	1.20	1.16
June	1.20	1.20	1.20	1.16
July	1.20	1.20	1.20	1.16
August	1.20	1.20	1.20	1.16
September	1.20	1.20	1.20	1.15
October	1.20	1.20	1.20	1.15
November	1.20	1.20	1.20	1.15
December	1.20	1.20	1.20	1.15

Ceramics

Introduction

Pottery making has an old history in Japan. As far back as can be traced in history some potters appear to have had their secret proprietary methods of production. In the Meiji Era, especially after the Russo-Japanese War, along with the advance in industry in general, pottery making was industrialized, a procedure which was thought difficult of accomplishment, and to-day annual production amounts to from ¥60,000,000 to ¥80,000,000 in value, while exports amount to over ¥30,000,000. It is now one of the principal industries in Japan.

The chief places of production are Nagoya and Seto, both in Aichi prefecture, and the eastern part of Gifu prefecture. The quantity produced in these places amounts to about 70% of the country's total production. Seto is such a famous place for pottery that the Japanese commonly call chinaware "Seto-mono." Besides the products named above "Kutani" ware of Ishikawa prefecture, "Shimizu" ware of Kyoto prefecture, and "Arita" ware of Saga prefecture, are all famous though produced in small quantities only. Nagoya district is one of the

largest pottery producing places in the world.

History

Pottery was being made, crudely admittedly, at the time of the Emperor Jimmu, the first Emperor of Japan, who lived about 650 B. C. At the time of the Emperor Suinin, that is, 66 A. D., a Korean prince was nationalized, and one of his retainers, who knew the potter's art, was able to give instruction on foreign manufacturing methods. Later, at the time of the Emperor Kammu, i. e., 781 A. D., pottery was imported from China, and the art made further progress.

In 1221 A. D., a man named Kagemasa Kato studied the art of pottery making in China. When he returned, he settled in Seto village, Aichi prefecture, and made chinaware of superior quality, the origin of the present "Seto" ware.

After that, many master artisans arose and tea-things, rice bowls, pitchers, incense burners, etc., now of great rarity and value were produced.

Present Condition of the Industry

Up to 1929, the chinaware industry enjoyed great prosperity. In 1928, total production amounted to

¥76,726,018, while there were as many as 6,862 factories and 47,108 employees. In 1929, production decreased by about ¥2,000,000's worth owing to a shrinkage in demand, though exports in that year were the greatest the country ever made. In 1930, owing to the raising of the embargo on gold, overproduction the world over, the panic in America, shrinkage in purchasing power in importing countries, the slump in the price of silver, increases in tariffs, and lowering of the price level in general, exports declined by about ¥10,000,000 and in 1931 by a further

¥8,000,000, while 1932 showed a slight increase of about ¥3,500,000. The reimposition of gold embargo and consequent lowering in exchange stimulated exports, which increased to ¥35,634,000 in 1933 and to ¥41,877,441 in 1934 respectively in spite of restrictions of import by many countries in Europe, British India, Dutch East Indies, etc.

Production

The following table shows how this industry has developed recently.

PRODUCTION OF POTTERY

Year	Exports yen	Domestic consumption yen	Total amount yen	Index number
1907	5,257,832	7,099,545	12,357,377	76
1914	5,913,768	9,743,088	15,656,856	100
1920	31,433,252	31,388,065	62,840,317	401
1925	35,272,738	42,905,005	78,177,743	498
1928	34,642,678	42,083,340	76,726,018	490
1929	36,962,654	37,804,816	74,767,470	478
1930	27,171,265	35,248,665	62,419,930	399
1931	19,307,490	34,890,394	54,197,884	346
1932	22,937,076	42,325,776	65,262,852	345
1933	35,634,000	49,612,500	85,246,500	544
1934	41,877,441	—	—	—

Factories and Workers

Number of factories and workers, in 1933, follows:

Prefecture	Total number of factories	Number of workers			Total
		Male	Female	Total	
Aichi	2,040	17,041	7,162	24,203	
Gifu	1,328	5,796	3,794	9,590	
Miye	164	1,973	774	2,747	
Kyoto	401	1,338	309	1,647	
Saga	232	1,986	972	2,958	
Osaka	40	678	63	741	
Fukuoka	60	628	547	1,175	
Nagasaki	111	729	429	1,158	
Ishikawa	521	1,559	342	1,901	
Shiga	143	693	275	968	
Hyogo	165	605	165	770	
Yamaguchi	186	589	342	931	
Others	1,295	3,480	1,073	4,553	
Grand total	6,586	37,045	16,247	53,292	

Exports of Chinaware

Though exports of chinaware amounting to ¥1,300,000 were made as early as 1886, the export business did not develop to any great extent until the Russo-Japanese War. In 1904, the Nippon Toki Kaisha, Ltd., was organized, to be quickly followed by the Toyo Toki Kaisha, Ltd., and the Nagoya Seito-sho. Each of these companies established large mills with up-to-date equipment and began to produce chinaware on a big scale. Painstaking studies were made to improve the products and build up an export business, and these, together with other special reasons, account for the remarkably large increase in exports. The special reasons are:

(1) Japan is able to produce specially thin chinaware that other countries cannot.

(2) Japanese artisans are especially clever at their work.

(3) The cost of production is reasonable.

Just at the time when the industry was organized on a modern basis, the World War broke out. Pottery works in belligerent countries in Europe were closed down and exports from Japan increased by leaps and bounds. A temporary set-back was experienced when the War ceased, but a recovery was soon made and there was a steady growth until 1929, then there was a falling off until 1932, when some slight gain was made over the previous year.

EXPORTS OF CHINAWARE TO DIFFERENT COUNTRIES (in ¥ 1,000)

Countries	1914	1929	1930	1931	1932	1933	1934
Manchoukuo	—	—	—	—	—	531,128	1,238
China	457	2,301	1,697	617	554	991	1,387
Kwantung Province	167	1,601	841	560	756	1,193	2,084
Hongkong	349	650	525	243	142	247	442
India	234	2,558	1,867	1,301	3,463	3,965	3,204
Straits Settlements	181	711	399	210	574	900	1,290
Dutch East Indies	121	4,927	2,765	1,711	2,424	3,728	3,269
French Indo-China	46	27	31	18	36	144	134
Philippines	—	666	679	400	635	959	580
Great Britain	291	517	719	696	825	1,296	1,161
France	126	636	883	1,079	311	643	355
Germany	127	297	317	199	100	146	221
Italy	—	356	242	195	236	371	343
Holland	42	1,028	1,157	1,200	843	981	761
U.S.A.	3,183	14,500	10,820	6,634	6,180	10,180	14,310
Canada	121	1,650	1,391	1,139	1,317	1,399	1,508
Argentina	—	387	249	174	150	395	628
Brazil	—	415	140	79	118	370	554
Egypt	—	101	119	146	408	438	627
Australia	158	1,159	769	665	1,768	2,707	2,331
Others	303	2,466	2,049	1,942	1,962	4,040	5,440
Total	5,913	36,962	27,171	19,307	22,937	35,634	41,879

Domestic Consumption

There are no statistics to rely upon for the exact amount of domestic consumption, but if we subtract exports from the total production we have an approximate value. Figures

shown in the second column of the first table "Production of Pottery" give some idea of the amount. Though tile making is growing fast on account of the increase in building of Western style houses, the market was depressed because of lack of

control over production and sales.

The peculiarity about chinaware intended for domestic use is that it must be made by small factories on the family basis. The reason is that the taste of the Japanese for

chinaware are very varied, differing according to each individual as to the form, colour, design, etc., and making it impossible to produce on large scale mass production principles.

Glass and Glass Manufactures

Origin and Development

As far as historical record shows, the art of glass manufacturing was developed in the Nara period, that is about 700 A.D. Later, techniques of manufacturing were imported both from the South Sea Islands and China, and put into practice in Osaka, Kyoto and Tokyo, where the industry developed. After the Meiji Restoration, the Government established a model factory to encourage the development of the industry and various attempts were afterwards made to make glass and glassware both by the Government and by individual concerns, but it was not until after the Russo-Japanese War of 1904-1905, that the industry made any great progress.

Present Condition

Due to the strenuous efforts of manufacturers and advantages from a low exchange rate since the gold embargo was replaced, the glass industry in Japan is doing remarkably well. Imports have gained but little during the past six years. They were worth ¥8,860,552 in 1926, ¥9,075,651 in 1933, and ¥4,607,129 in 1934 not counting photographic plates in any year.

On the other hand, the exportation of Japanese glass products, stimulated by exchange relations, has been exceptionally active since the last gold embargo was clamped. Exports in 1932 came to ¥9,281,682, in 1933 to ¥15,326,611, and in 1934 to ¥19,454,333. Glass products from

this country are shipped to almost all parts of the world.

A strong point for Japanese glass exports is that Japanese manufacturers and traders are able to reduce their export prices by 30 per cent., since the present prices are 30 per cent. higher than usual. Exporters are wisely leaving room for competition with foreign products, even though tariff rates are raised by foreign countries. Still, the present prices of Japanese products are low and for this reason, they are in heavy demand abroad.

Glass Tableware Glass tableware was early manufactured in Kagoshima and the old province of Satsuma in Kyushu Island. After the Meiji Restoration it was manufactured by the Shinagawa Shoshi Seizosho (Shinagawa Glass Co.) which was under Government control. At present it is manufactured by the Fukushima Glass Co. organized in 1896, Koidé Shoshi Seizosho (Koidé Glass Co.) established in 1898, Marusa Glass Co., organized in 1918, and the Kawai Shoshi Shokki Seizosho (Kawai Table Glassware Co.) organized in 1920, etc. Production by these and other manufacturers is given below.

Other Glass Articles Glass articles for scientific and medical purposes were manufactured as early as 1850. There are many manufacturers of these articles in Tokyo district.

The manufacturing of eye-glasses was first practised as early as 1600. In 1873, a certain Mr. Matsugoro

Asakura from Tokyo, went to Austria and learned the art of manufacturing eye-glasses on modern principles. His son and several others are now manufacturing them.

Red glass was manufactured by the Kagoshima clan prior to the Meiji Restoration, and later by the Shinagawa Shoshi Seizosho, which was under Government control. Also a certain Mr. Tokijiro Iwashiro succeeded in manufacturing lenses for the use of search-lights, and light-houses. The right of manufacturing these lenses was later transferred to the Nippon Kogaku Kogyo Kaisha, Ltd., (The Nippon Optical Science Industrial Co., Ltd.). Mr. Iwashiro's son later succeeded in manufacturing cut glass.

Glasses for optical work were mostly imported from Germany before the World War, but when the supply was cut off by the war, it was determined that "lenses for optical science must be produced at home at any cost." The Nippon Kogaku Kogyo Kaisha, Ltd., to which all the results of studies made by the naval arsenal were transferred in 1914, and the Osaka Industrial Research Institute, which started research work in 1921, continued investigations. The Osaka Institute succeeded in 1925 in discovering a formula for manufacturing lenses, superior to German makes at reasonable cost. The Nippon Kogaku Kogyo Kaisha, Ltd., also succeeded in finding a way to make these lenses, and it is probable that the importation of lenses of these classes from Germany will, in a not distant future, become unnecessary.

Glasses for the chemical industry, that is, hard glasses, are manufactured in several mills in Japan. High grade hard glass which is not in any degree inferior to the best imported is now manufactured by

several firms for thermometers, gauges and the chemical industry.

Sheet Glass

Though many efforts were previously made to manufacture sheet glass, it was not until 1904 that a Mr. Magoichi Shimoda, after two years of experimental manufacture, was successful in producing a product that could be put on the market.

In 1907, the Asahi Glass Co., Ltd., was organized in Amagasaki, Hyogo prefecture, by the family of the late Baron Yanosuké Iwasaki. An expert and five skilled workmen were brought over from Belgium and commenced to manufacture from 1909. The company struggled for 7 years against difficulties in technique and pressure of foreign competition, and in the end succeeded in producing about 120,000 cases a year. In 1914, a patent, which enabled the company to produce sheet glass by a mechanical process was bought from the American Window Glass Co., Ltd., and a factory was established at Makiyama in Tobata, Fukuoka prefecture. On account of the cutting off of imports from Europe during the World War, the company not only increased production, but exported their products to places far afield as South Africa and London. In 1916, the company established a factory in Tsurumi, Yokohama, and in 1917 another in Yawata, Fukuoka prefecture. In 1923 and 1924, the factories in Makiyama and Tsurumi were extended, and at present the company is able to produce as much as 330,000,000 sq. feet.

The Nichi-Bei (Japan-American) Sheet Glass Co., Ltd., was organized in 1917 and was the first to use the sheet process in Japan. The Shoko Glass Co., Ltd., was organized in 1925 under the joint management of the Asahi Glass Co., Ltd., and the South Manchuria Railway Co., Ltd.

The company is manufacturing glass under licence from the Asahi Glass Co., Ltd., by the method employed by the latter. At present the

above mentioned three companies only are manufacturing sheet glasses. Their capital, capacity, etc., are as follows:

Companies	Head office	Authorized capital yen	Paid-up capital yen	Capacity cases	Factories
Asahi Glass Co., Ltd.	Tokyo	20,000,000	20,000,000	3,300,000	Tsurumi, Makiyama, Amagasaki
Japan-American Sheet Glass Co., Ltd.	Osaka	4,000,000	3,250,000	650,000	Mishima
Shoko Glass Co., Ltd.	Tokyo	3,000,000	3,000,000	250,000	Shakako (in Manchoukuo)

PRODUCTION OF GLASS AND GLASSWARE

(one case contains 100 sq. ft. of glass)

Year	Table ware	For decorative purposes		For illuminating purposes		Bottles
		Beads and balls	Arm rings	Shades and globes	Others	
1924	1,863	—	888	2,021	—	20,097
1925	2,610	—	1,263	2,423	—	20,764
1926	3,081	—	884	2,501	—	19,568
1927	5,109	—	907	2,926	—	16,195
1928	2,956	—	1,015	3,193	—	17,026
1929	3,360	465	1,070	1,326	455	17,813
1930	2,570	893	859	838	244	14,765
1931	2,455	71	570	388	944	10,927
1932	4,193	373	633	391	733	11,193
1933	4,143	302	696	499	1,280	16,845

Year	Sheet glass thickness under 2.2 mm.		Sheet glass thickness under 4 mm.		Others		Looking glasses		Others
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
1924	—	—	18,531	—	—	—	—	—	53,611
1925	—	—	17,286	—	—	—	—	—	47,554
1926	—	—	15,504	—	—	—	—	—	45,890
1927	—	—	14,478	—	—	—	—	—	44,270
1928	—	—	15,145	—	—	—	—	—	44,681
1929	1,506	12,121	53,339	426	143	2,256	45	789	44,669
1930	1,863	12,915	169,680	2,291	12	220	44	25	40,583
1931	2,104	16,690	99,484	1,010	16	332	53	128	34,338
1932	1,757	9,908	337,550	2,137	210	2,124	80	235	37,233
1933	2,039	15,237	427,337	3,988	335	3,147	74	288	52,526

EXPORTS OF GLASS AND GLASSWARE (Value in ¥1,000)

Kinds	1924		1930		1931	
	Quantity	Value	Quantity	Value	Quantity	Value
Window glass in 1,000 sq. ft.	1,729	220	3,790	260	2,808	203
Thermos in doz.	91,264	859	232,996	1,525	116,570	690
Glass bottles in 1,000 doz.	9,866	3,171	15,550	2,970	11,307	2,109
Glass cups in 1,000 doz.	1,947	1,572	2,285	1,376	2,853	1,448
Glass tableware in 1,000 doz.	—	—	142	126	199	167
Watch glasses in gross	77,032	152	71,855	109	63,550	71

Kinds	1924		1930		1931	
	Quantity	Value	Quantity	Value	Quantity	Value
Glass beads and balls in 100 kin	—	1,379	7,980	503	6,301	371
Spectacles in 1,000 pcs.	—	—	2,587	265	2,157	221
Looking glasses in 1,000 pcs.	8,776	1,912	16,091	1,352	12,705	908
Other glasses & manufactures	—	849	—	1,118	—	341

Kinds	1932		1933		1934	
	Quantity	Value	Quantity	Value	Quantity	Value
Window glass in 1,000 sq. ft.	5,120	377	13,710	969	23,318	1,596
Thermos in doz.	92,055	555	191,455	1,330	234,104	1,653
Glass bottles in 1,000 doz.	16,471	2,814	19,118	3,795	20,394	4,618
Glass cups in 1,000 doz.	3,746	1,724	4,788	2,827	5,375	3,327
Glass tableware in 1,000 doz.	485	337	1,118	749	996	925
Watch glasses in Gross	76,875	83	88,150	99	119	132
Glass beads and balls in 100 kin	16,948	1,043	19,606	1,179	2,277	1,351
Spectacles in 1,000 pcs.	4,354	412	8,705	997	12,738	1,451
Looking glasses in 1,000 pcs.	22,871	1,306	40,047	2,226	54,597	2,645
Other glasses & manufactures	—	625	—	1,151	—	1,750

IMPORTS OF GLASS (Value in ¥1,000)

Kinds	1923		1930		1931	
	Quantity	Value	Quantity	Value	Quantity	Value
Uncoloured plate glass under 2.2 mm., 1,000 sq. m.	2,893,702	3,114	2,216	1,392	2,053	625
Uncoloured plate glass under 4 mm., 1,000 sq. m.	61,873	118	118	174	36	67
Other uncoloured plate glass in 1,000 sq. m.	184,356	928	430	2,086	370	1,772
Other plate glass in 1,000 sq. m.	190,398	2,352	551	972	607	832
Plate glass having inlaid metal wire or net in 1,000 sq. m.	180,157	653	183	511	186	367
Dry plates for photography in 100 kin	12,802	1,399	17,008	1,472	17,008	1,472

Kinds	1932		1933		1934	
	Quantity	Value	Quantity	Value	Quantity	Value
Uncoloured plate glass under 2.2 mm. in 1,000 sq. m.	1,565	977	1,410	1,000	1,131	954
Uncoloured plate glass under 4 mm. in 1,000 sq. m.	53	260	35	255	44	357
Other uncoloured plate glass in 1,000 sq. m.	247	1,885	166	1,622	176	1,865
Other plate glass in 1,000 sq. m.	431	845	460	923	315	676
Plate glass having inlaid metal wire or net in 1,000 sq. m.	122	504	164	632	204	753
Dry plates for photography in 100 kin	13,770	1,639	14,162	2,195	12,564	1,823

Lacquer-ware

Historical and General

Industry Inherent The Japanese are a people skilled in handiwork. Prior to the introduction of modern productive industries from the West

in the early years of Meiji, the Japanese were separated from Occidental civilization and culture and the various handicraft industries that had come down from ancient times were in a flourishing condition

and in a state of development peculiar to the country. The industries especially referred to are the silk, porcelain, earthen-ware, lacquer-ware, cloisonné-ware, gold lacquer-ware and the metal engraving.

The lacquer-ware industry existed in ancient times. As was the case with the ceramic industry, it progressed with the introduction of Buddhism and of advanced methods from China, but did not make so notable a development as in the case of the textile, ceramic or other industries. With the rise to favour of the tea ceremony in the Ashikaga Period, Kyoto monopolized the production of lacquer-ware, although wares of nearly the same kind, such as "Wajimanuri" and "Shunkeinuri" were produced in fairly large quantities in different places and were largely used for table-ware. After the Restoration of Meiji there was a considerable decline in the demand for such wares as "Noshironuri," "Wakanuri" and "Tsugarunuri" which had been popular in the Tokugawa Period, while the output of "Wajimanuri," "Kurodenuri," and "Imazunuri" which had principally been used as table-ware greatly increased as they were being exported in increasingly large quantities.

Urushi Obtainable Only in the Orient Japan is the only country in the world enjoying world-wide renown in the technical art of lacquer-ware manufacture. The various industrial arts of Japan such as the porcelain and weaving owe their origin to China or Western countries, but as regards lacquer, Japan acknowledges no teacher; from remote antiquity, especially in the technique of relief lacquer the art has developed without aid from any foreign methods of manufacture or materials. For more than two thousand years the craftsmen of Japan, having striven to improve, finally attained

a degree of wonderful skill. The production of lacquer-ware is confined to Oriental countries where only lacquer juice, known as urushi, is obtainable—Japan, China, Korea and India,—although there is an evident tendency in Western countries in recent years to manufacture lacquer-ware of industrial art value. The application of mother of pearl, known as nacre work, became common during the Nara Period. A large number of ancient examples of lacquer-ware that have served as models for succeeding generations are still kept in the Shosoin, the Imperial Treasure House in Nara. These represent products of the Tempyo Age, when even large wooden buildings were lacquered. Among such buildings left standing are the Chuson Temple in Iwaté prefecture and the Byodoin Temple in Kyoto prefecture. Embossed lacquer-ware was invented during the Kamakura Period, when tasteful designs of chrysanthemums and other flowers were in vogue.

From Toyotomi Downward A golden mother of pearl inkstone case in embossed lacquer with a chrysanthemum design is now treasured in the Hachiman Shrine at Kamakura. The pomp and glory of the third Ashikaga Shogun stimulated the art and resulted in the perfecting of embossed lacquer work and the extension of its application to articles of daily necessity. Hideyoshi Toyotomi accomplished his gigantic task of pacifying the country. Grandeur was a unique feature of his administrative policy and social and other life in those days. The grand Momoyama style was reflected on the industrial arts. Koetsu relief lacquer was supreme and Kodaiji relief lacquer was also produced, representative lacquer products of those days. When the third Tokugawa Shogun, Iyémitsu, came into power,

he erected the great Nikko mausoleum and Zojoji Temple at Shiba, Tokyo for his grandfather and father respectively, and lacquer was amply applied to these buildings. During the reign of the fifth Shogun, Tsunayoshi, an exquisite technique attained its zenith, defying all the imitative powers of succeeding generations. It was applied to scabbards of swords, miniature medicine-cases (known as inro) and various articles used by the Daimyo. Notable lacquerers such as Koami Choju, Koma Ikyu, Ogata Korin and others flourished during this period. Since that time the production of lacquer has spread to various localities throughout the country, and unique local colour has been freely introduced into the design. Competition ensued as in all industrial articles, and some of the products of those days were exported abroad. Japanese industrial arts were almost wholly neglected during several years following the Meiji Restoration. Lacquered articles of artistic value were sold at ridiculously low prices and these were purchased by foreigners who had eyes for their value and who took them to their own countries. This provided an opportunity to introduce the Japanese lacquer art to foreign countries, but at the same time Japan lost many articles of both æsthetic and monetary value.

Its Fine Quality A French steamer was wrecked off Izu while outward bound from Japan laden with Japanese lacquer-ware that was to be exhibited at the Vienna International Exposition in 1873. The cargo was salvaged 18 months after the accident and the lacquer goods were found to be undamaged. On slight polishing they regained their former lustre and thus displayed the intrinsic value of this national art product. When the news of this salvaging and condition of the goods became known

abroad the export trade took a sudden spurt forward, but there were traders who exported goods of poor quality, and did great damage to the credit and value of Japanese products in the eyes of foreign customers. Apart from defects in manufacture, some of the bad reputation which exported Japanese lacquered-ware has gained, is ascribed to the fact that some manufacturers are producing inferior articles on account of having been forced by exporters to lower prices, but of late years efforts have been made by the authorities concerned to remedy these evils.

The Output

The annual production of lacquered articles is valued at more than ¥30,000,000, and the annual export value is about ¥2,000,000. The United States is the largest consuming country, and next comes Great Britain, with other countries far behind. Total exports stood at ¥90,000 in 1872, ¥680,000 in 1887, ¥890,000 in 1902, ¥1,140,000 in 1912, ¥1,340,000 in 1922, ¥1,780,000 in 1925, ¥1,490,000 in 1927 and since then the amount has been increasing yearly, the average annual export value for these several years being about ¥2,000,000. Kyoto, Aichi and Ishikawa prefectures are the largest producing centres in Japan.

How the Ware is Made

Lacquer Juice Lacquer juice forms the main material of the craftsmen. It is obtained from the lacquer (urushi) tree grown in Oriental countries and is a milky juice with a greyish-white colour. In air it undergoes an oxidizing process, becomes brown and finally solidifies. When solidified, it is not soluble in ordinary solvents and has an unusual resistance to acids. Its beautiful appearance and smooth feel defy

paint and varnish. Lacquer juice is regarded as a botanical excrete and in normal conditions is stored in a fixed position in the tree. The tree is tapped by making a horizontal, slanting or V-shaped incision of 10 centimetres right to the sap, and from this the greyish-white juice oozes. Attempts have been made to obtain the juice by means of pressing the bark and leaves of the tree, or by using alcohol, but without success. The greyish-white product is called raw lacquer and is used for the initial application to the goods to be lacquered. As material for the finishing applications and colour lacquering the water is extracted from the juice, and various refining processes follow according to the result required. The chief ingredients of raw lacquer are Urshiol, 77.63%, gummy substance, 2.62%, carbonic substance 1.94% and water 17.81%.

Manufacturing Process Lacquer-ware manufacturing is divided into three stages, namely, the initial application, lacquering and relief lacquering. The process is further divided into different categories according to technical experience and skill. Wood, bamboo, paper, metal and porcelain are used as basic materials for initial lacquer applications. Wood is mostly used throughout the country, but wood has the drawback of swelling and contracting according to weather condition. Bamboo and paper are used for particular lacquer-ware making, while metal and porcelain are less commonly used. The initial application is made on the surface of the ware by means of a spatula or brush, the article is thus made water-proof and the absorption of lacquer applied to finish or fill in tiny holes or other defects is prevented. The finishing process is of course for the pur-

pose of making the ware solid and smooth.

Lacquer is the best material for the initial application, though shibu-varnishing or glue-varnishing is also practised, especially for low grade wares. The juice of the astringent persimmon is the chief substance of shibu, and with this is mixed powdered charcoal or other materials. Glue is also used as a raw material, but it is not much good for solidity. Glue-varnished wares are made mostly for export, and the had reputation that modern Japanese lacquer-ware has in foreign markets is chiefly ascribed to these glue-varnished articles. Formalin is used to solidify these wares. As regards the finishing application, a proper amount of pigment is added to refined lacquer to make it coloured or transparent, and this is finely applied to wares that have been through the initial application. These are then kept in a wooden closet to avoid dust and allowed to dry. This is called fresh lacquering. When wares are dry, they are polished by charcoal.

Relief lacquering was evolved to give beautiful designs to wares after the finishing application had been gone through. Pictures or designs are painted on the articles by lacquer and before the lacquer is dry, gold, silver and other metallic dust or pigment is applied. Then polishing for the finishing touches takes place. This is called ordinary relief lacquering, but there are other methods of production and prices differ according to the extent of finish. Of the two principal methods of manufacturing high-class goods, polished relief lacquering is one. When the ordinary relief lacquering process is completed, lacquer is once more applied to all the surface and the whole is then polished by charcoal, and the design is pre-

sented on the flat surface. The other is embossed relief lacquering, and this requires much time and skill. Designs are made in high relief and the ordinary relief lacquer is applied. Shells, corals, jewels and stones are often inlaid in lacquer-ware and to these are applied transparent or block lacquer, the product being known as aventurine-ground lacquer-ware. Gold dust is also applied in relief and this is known as flush pointing. Another unique lacquering is the application of coloured lacquer coatings for as many as a hundred times, and when dry an exquisite design is carved on the ware. This process somewhat differs from relief lacquering but it forms one of those elaborate methods in the manufacture of the lacquer-ware which remains one of the outstanding products of the Japanese craftsman.

Production and Exports

Japanese lacquer-ware produced

during 1933, the latest figure available, amounted to ¥29,571,665 while exports amounted to ¥2,371,000 in 1933 and to ¥2,570,476 in 1934. Production classified according to prefectures follows:

Prefecture	Production in 1933 (In Yen)
Kyoto	3,898,600
Aichi	4,031,142
Ishikawa	2,643,087
Fukushima	2,162,026
Wakayama	2,703,375
Shizuoka	2,420,690
Fukui	1,384,537
Niigata	962,000
Toyama	1,030,127
Yamagata	752,883
Shiga	754,229
Kagawa	672,362
Others and Total	29,571,665
1932	26,632,909
1931	25,658,693
1930	23,244,095
1929	33,866,882
1928	35,962,754

CHAPTER XXIII

MISCELLANEOUS INDUSTRIES (Continued)

Caustic Soda, Soda Ash, Bleaching Powder, Dyestuff, etc.

Introductory

The Japanese chemical industries involving the manufacturing of caustic soda, soda ash (sodium carbonate or washing soda) and bleaching powder owed their development to the World War, which stimulated them to sudden growth. More than 10 companies were founded during that period, but only a few of them survived the great economic slump which followed the termination of the World War. For a long time after the War, the industries were in a depressed condition. It has been no easy matter for the existing companies to have arrived at their present stage of development, many attempted but fell on the way, often, with others to be merged with stronger concerns. Those which are doing business at present are all backed by large business houses or financing organizations. Protection of the Government, which is alive to the momentous value of these industries, must not be ignored. Without Government protection and encouragement, the prosperity to which they have now attained would never have been realized. There are about nine leading industries which the Government and the various authorities concerned are making efforts to consolidate, and this is one of them. The others are the nitrogen fixation industry, the dyestuffs industry, the iron and steel manufacturing industry, the aluminium industry, the oil industry, the automobile industry,

the photo-chemical industry, and the minute chemical industry.

Soda Ash Industry

The soda ash industry holds an important position in Japanese industrial circles. It is an industry inseparable from that of glass and other chemical industries that require considerable amounts of alkali. Soda ash occurs in its natural state in some parts of the world, but in this country it has to be prepared from salt, and as salt is a Government monopoly the price is high, so when the Asahi Glass Company, in order to attain self-sufficiency, started the production of soda ash after the World War it did so on an uneconomic basis, but the Government came along and by granting liberal subsidies to this and other concerns saved the industry and put it on a paying basis. Brunner, Mond and Company (British) and H. Ahrens and Company (German), who used to be the largest importers, were hit hard by this development in home production. The history of the growth of the soda ash industry in Japan is the history of strife between the Asahi Glass Company, backed by the Mitsubishi interests and protected by the Government, and these foreign concerns. The total production of soda ash in 1933 was 272,135 tons while about 45,725 tons were imported. In 1934 Japan succeeded in exporting about 15,160 tons and has become more than self-sufficient in this article.

Caustic Soda

As a by-product of the production of caustic soda the poisonous gas chlorine is freed. This gas is made into commercial bleaching powder, and in the past the commercial production of caustic soda was only possible if a good price was obtained for bleaching powder and the industry was greatly dependent on this latter commodity for quantity of production. Nowadays, as soda ash is being produced cheaply, caustic soda is being manufactured from it and domestic production is increasing. The replacement of the gold embargo and the raising of the tariff virtually sealed the activity of the British importing concern, whose pressure was a great hindrance to the development of the Japanese soda ash industry, and self-sufficiency in the production of both soda ash and caustic soda has been thereby attained. Brunner, Mond and Company has largely restricted its activities and home production has greatly increased. The Asahi Glass Company and Nippon Soda Kaisha, known as N. S. K., have recently expanded their equipment for producing soda ash to an annual productive capacity of 150,000 tons, which is about 30,000 tons more than the yearly domestic demand. The production of caustic soda in 1933 totalled 131,709 tons which showed that the increased productive equipment of N. S. K. and the Electrolytic Soda Industry Company was completed.

Bleaching Powder

The demand for bleaching powder has become active since an improvement was registered by the paper manufacturing companies, who consume 70 per cent. of the total pro-

duction. The business solely depends on the rise and fall of the foreign-style paper manufacturing industry.

The Industries in 1934

Caustic Soda Along with the increase in the production of rayon, that of caustic soda also gained. Especially the increase of production by ammonium method was remarkable. The Asahi Glass Company commenced activities in 1933 and completed equipments for a production of 110 tons per day. Owing to prosperous export, equipments for production by electrolysis method were extended also. The Nippon Soda Kogyo Kaisha added a mill with a capacity of 10 tons a day; the Nippon Electrolytic Soda Industry Co. one with 24 tons; the Saito Ryuso Kaisha one with 8 tons; the Tsurumi Soda Kaisha one with 12 tons, while the Nobeoka Mill of the Asahi Bemberg Co. has become self-sufficient with regard to the supply of caustic soda, and the production of 1934 was 164,834 tons against 131,709 tons of 1933 and showed a gain of 25 per cent. On the other hand, imports in the same year totalled 16,546,000 kin and showed a decrease of 4,249,000 kin. Exports showed a sudden increase to 20,488,600 kin.

Caustic Soda Market The caustic soda market was dull owing to the dullness in rayon market throughout the year although toward the close of the year, increased production of rayon as well as demand from new mills of Fukushima, Kinkwa, Teikoku, Toyo, Nippon, and Dai Nippon Rayon Companies were enough to revive the market and enabled it close the year in a firm tone.

CAUSTIC SODA MARKET IN 1934
 (unit in yen per bag of 100 kg.)

Month	Price	Month	Price
Jan.	20.50	July	17.40
Feb.	20.00	Aug.	17.00
Mar.	19.30	Sept.	16.90
Apr.	18.40	Oct.	16.30
May	18.20	Nov.	16.00
July	17.80	Dec.	16.70

Soda Ash Along with the activities in glass, soap, dye-stuff, and medicine industries this industry was active, too, its production amounting to 202,291 metric tons. Exports also totalled 15,403 tons. Market, however, was weak throughout the year, the trend of which follows:

SODA ASH MARKET IN 1934
 (unit in yen per bag of 100 kg.)

Month	Price	Month	Price
Jan.	10.34	July	9.50
Feb.	10.30	Aug.	9.00
March	10.02	Sept.	8.80
Apr.	10.00	Oct.	8.50
May	9.68	Nov.	8.50
June	9.00	Dec.	8.50

Bleaching Powder This industry continued to keep up a high rate of curtailment in 1934.

MONTHLY CURTAILMENT OF PRODUCTION OF BLEACHING POWDER

Month	Curtailment in %	Month	Curtailment in %
Jan.	50	July	48
Feb.	55	Aug.	52
Mar.	55	Sept.	52
Apr.	55	Oct.	40
May	52	Nov.	40
June	48	Dec.	45

MONTHLY DEMAND AND SUPPLY OF SODA ASH IN 1934

(in metric tons)

Year and month	Production	Imports	Exports	Supply
1934				
Jan.—June total	119,175	21,337	5,078	135,434
July	11,253	4,161	887	14,537
August	12,519	2,964	1,588	13,895
September	12,818	1,847	1,106	13,559
October	15,285	2,694	2,706	15,273
November	15,018	1,752	2,258	14,512
December	16,213	2,884	1,780	16,817
1934 total	202,291	37,139	15,403	224,027
1935				
January	15,728	1,082	2,754	14,056

In recent years the control of cartel on the production and sales of bleaching powder has been much weakened owing to the fact that some companies are producing liquid chlorine and is selling it as such. In order, therefore, to make the control of bleaching powder effective it was agreed to extend it to the production, sales and price of liquid chlorine by the Joint Sales Association of bleaching powder. Production of bleaching powder in 1934 totalled 64,980 tons, showing a gain of 3,838 tons over 1933. Exports showed an increase, too, and amounting 4,247 metric tons.

Statistics Below are given data bearing upon the industry of these three articles:

PRODUCTION AND IMPORTS OF SODA ASH

	Production (In metric tons)	Imports
1924	2,002	118,898
1925	11,162	130,069
1926	17,318	36,634
1927	23,130	100,434
1928	30,928	78,649
1929	43,533	76,116
1930	57,233	65,206
1931	93,244	54,336
1932	134,807	46,434
1933	272,135	46,447
1934	202,291	37,139

PRODUCTION, IMPORTS AND EXPORTS OF CAUSTIC SODA

	Production	Exports (In metric tons)	Imports	Supply
1923	21,684	80	15,543	37,147
1925	25,423	216	22,154	47,861
1926	25,341	42	36,208	61,507
1927	24,094	54	40,946	64,986
1928	28,700	33	58,593	87,260
1929	57,382	22	42,888	99,550
1930	34,738	17	37,592	72,313
1931	48,536	10	41,595	90,121
1932	75,116	2,238	28,185	101,063
1933	131,709	5,116	12,477	139,070
1934	164,834	12,293	9,928	162,469

MONTHLY DEMAND AND SUPPLY OF CAUSTIC SODA IN 1934

(In metric tons)

Year and month	Production	Imports	Exports	Domestic supply
1934				
January—June total	77,375	4,033	4,035	77,373
July	14,422	213	996	13,639
August	14,756	885	1,256	14,385
September	12,142	905	317	12,730
October	14,685	1,337	1,568	14,454
November	15,383	1,022	2,115	14,290
December	16,071	1,533	2,006	15,598
1934 total	164,834	9,928	12,293	162,469
1935				
January	16,695	1,114	2,233	15,576

PRODUCTION AND EXPORTS OF BLEACHING POWDER

	Production	Exports	Supply	Production	Exports	Supply	
				(In metric tons)			
				1928	46,325	3,080	43,245
				1929	50,756	3,109	57,647
				1930	49,471	3,446	46,025
1924	33,368	2,752	30,616	1931	45,005	3,544	41,461
1925	36,890	2,542	34,348	1932	47,485	2,858	44,627
1926	33,288	2,618	30,670	1933	61,142	3,892	57,750
1927	37,334	2,588	34,746	1934	64,980	4,247	60,733

MONTHLY DEMAND AND SUPPLY OF BLEACHING POWDER IN 1934

(In metric tons)

Year and month	Production	Exports	Domestic supply
1934			
January—June total	28,867	1,890	26,977
July	5,473	361	5,112
August	5,060	302	4,758
September	5,356	335	5,021
October	7,068	565	6,503
November	6,892	428	6,464
December	6,264	566	5,898
1934 total	64,980	4,247	60,733
1935			
January	5,995	401	5,594

Soap Making

Development and Production

The industry was started early in the Meiji Era, but no great progress was made until after the Russo-Japanese War of 1904-1905, when machinery was introduced from abroad. During the World War, the industry enjoyed great prosperity, but the reaction was also very severe when it came in 1920. However, during those difficult times, the foundation of the industry became more consolidated and the quality of soap improved a great deal.

Production of soap in Japan is as per the accompanying table. Tokyo and Osaka are the two principal places of production, the former producing about 50% of the total production in the country, while Osaka produces about 30%. Export of soap, 90% of which is toilet soap, are made mostly from Osaka for China and Kwantung Province. Imports amount to barely ¥100,000 in value a year.

Raw Materials for Soap

Oils, tallows and alkali are used as raw materials for soap. The principal raw material, beef tallow, is imported from Australia, while tallow, copra oil, hardened fish oil, and groundnut oil, of domestic production mostly, are also used. For laundry soaps, hardened fish oils and cheap vegetable oils are used.

For soap for industrial purpose, vegetable oils of superior grade are mostly in demand, and for soap for washing silk goods, puna oil is in common use. About 50,000 tons of raw materials are consumed for soap making purposes, tallow accounting for 14,000 tons, hardened fish oil 20,000 tons, copra oil 6,000 tons, while about 10,000 tons of caustic soda and considerable quantities of soda ash are used.

Methods of Production

Soap has long been produced in Japan on a household industry basis, but the methods used have been rather backward when compared with the progress made in other industries. Recently, however, a considerable amount of capital has been invested in the industry, modern machinery has been installed and well-trained personnel engaged, factors which promise further improvement. Most of the toilet soap is produced on a large scale by machinery.

To ascertain the amount invested is very difficult as the industry is still run mostly as a household industry. The principal soap manufacturers producing on a large scale are Harumoto Sekken Seizoshō, Nitto Sekken Kaisha, Ltd., Nakayama Taiyodo, Velvet Soap Making Co., Ltd., Nagasé Shoten, Ltd., Marumiya Shoten, and Shiseido.

PRODUCTION OF SOAP BY MILLS EMPLOYING MORE THAN 5 PERSONS
(in ¥1,000)

Year	Toilet soap	For industrial purposes	For medical purposes	For laundry	Powdered soap	Others	Total
1922	14,327	1,450	—	—	—	—	23,569
1923	15,916	3,718	—	—	—	—	20,803
1924	17,981	3,093	—	—	—	—	28,762
1925	20,526	1,964	—	—	—	—	30,118
1926	21,525	2,114	—	—	—	—	33,906
1927	23,339	1,849	—	—	—	—	36,141
1928	24,654	2,283	—	—	—	—	39,146

Year	Toilet soap	For industrial purposes	For medical purposes	For laundry	Powdered soap	Others	Total
1929	22,690	2,370	5	10,199	1,767	1,908	38,942
1930	18,564	2,863	397	11,098	1,833	605	35,062
1931	17,246	1,480	173	7,561	2,083	1,355	29,900
1932	19,164	1,450	268	8,389	2,642	428	32,344
1933	21,243	2,558	194	9,584	2,992	1,118	37,691

Vegetable and Animal Oils and Fats

Introduction

For lighting purposes vegetable oils have been used in Japan for centuries. In earlier days perilla oil was used but this was later replaced by rapeseed oil. The production of these oils on an industrial basis only developed after the Russo-Japanese War of 1904-1905.

The Development of Oil Industry

Production of hardened oil in Japan during 1933 amounted to 61,500 metric tons in contrast to 50,150 tons for 1932; 46,800 tons for 1931; and 42,100 tons for 1930. The increase was the result of high market price. It is used mostly for soap making, candles and dietary purposes. Even during the time when Japan was on gold, hardened oil was exported. Since the country was off gold, exports have increased. The 1934 exports were 24,104 metric tons, worth ¥5,042,254; 1933 year exports 23,421 metric tons, worth ¥4,939,000; 1931 year exports 13,044 metric tons, worth ¥2,997,000; 1930 year exports 12,326 tons, worth ¥3,987,000. Last year's exports were about 85 per cent. gain in the quantity over 1931.

The principal vegetable oils produced are soy bean and rapeseed. Linseed oil, perilla oil, hempseed oil, wood oil, sesame oil, cotton-seed oil, castor oil, groundnut oil, copra oil, camella oil etc., are also produced in considerable quantities. The produc-

tion of soy bean oil in 1913 was valued at ¥1,330,000, but by 1933, this had increased to ¥13,115,000, after having touched over ¥13,900,000 in 1929; rapeseed oil was valued at ¥10,123,000 in 1933; groundnut and copra oils reached over ¥10,000,000 during the World War, but had decreased to ¥385,639 and ¥2,657,171 by 1933. On the other hand, the production of linseed oil during the World War was valued at barely ¥200,000, but this had increased to ¥3,775,357 in 1933. The production of cottonseed oil and sesame seed oil has developed steadily since the Great War, being in 1922 valued at ¥817,288 and ¥969,891, while in 1933 they were ¥2,731,458 and ¥2,662,503 respectively.

In addition to the above-mentioned vegetable oils Japan produces, in Kyushu Island, vegetable wax, but the yields of "hazé" seed, from which the wax is produced, has been yearly decreasing and production has correspondingly fallen off. The yield in 1933 was 4,208,131 kilogrammes valued at ¥1,440,017.

Of the principal vegetable oils produced in Japan, only wood and camellia oils and vegetable wax are pressed from domestically grown seeds, all the others obtain their materials from abroad. Soy bean oil, rapeseed oil, and vegetable wax are exported, their total amount in 1934 being ¥6,905,000. The importation of vegetable oils is very small indeed.

The industry in 1934 The price of ¥25 per 100 kg. of hardened fish oil was maintained firm till the end of April. In May the appearance of the outsiders such as the Okuyama Soap, the Lion Soap, the Chosen Oil Co., etc. made the control of the cartel weak, and the market price declined continuously until September.

After September, owing to the report on the probable shortage of oil in America, due to short crops of cotton seeds caused by drought, along with failures of crops of soy beans in Manchoukuo and groundnuts in India, the hardened oil market became firm. The market price in the year follows:

MARKET PRICE OF HARDENED FISH OIL

(in yen per 100 kg.)

Month	Price	Month	Price
January	25	July	20
February	25	August	18

Month	Price	Month	Price
March	25	September	18
April	25	October	20
May	23	November	20
June	22	December	22

The Lion Soap Co., Ltd. with 200 tons hardened oil production capacity per month, the Okuyama Soap Co., Ltd. with 300 tons production capacity and the Chosen Oil Co., Ltd. with 500 tons production capacity were established. These outsiders as well as the activities of the Yamamasu Oil Co., Ltd. weakened the control of the cartel. Later in the year, however, with the solution of problem of import of the Korean fish oil, the Chosen Oil Co. became a member of the cartel, which has resulted in strengthening control. Production of 68,000 tons and export of about 24,000 tons in 1934 showed gains over 61,000 tons and 23,400 tons respectively of 1933.

Statistics for the oil industry follows:

PRODUCTION OF VEGETABLE OILS

Year	Rapeseed oil yen	Sesameseed oil yen	Groundnut oil yen	Cottonseed oil yen	Copra oil yen	Soy bean oil yen
1924	13,165,556	2,188,861	194,423	1,428,689	2,955,374	10,044,596
1925	13,511,189	2,760,426	134,172	2,040,500	2,799,482	13,923,496
1926	13,474,263	2,182,166	107,517	2,666,062	2,823,263	13,386,947
1927	15,228,035	2,443,638	220,845	1,913,650	2,090,566	13,710,816
1928	12,214,398	2,645,601	165,667	2,011,407	2,346,020	13,963,580
1929	12,214,398	2,398,899	253,659	3,393,853	2,800,842	13,963,580
1930	10,826,085	2,382,457	234,880	2,568,777	2,184,334	9,146,415
1931	8,074,304	2,428,682	276,802	1,456,122	1,890,339	9,143,974
1932	8,398,297	3,122,444	244,834	1,165,868	1,991,043	10,570,255
1933	10,123,029	2,662,503	385,639	2,781,458	2,657,171	13,115,461

Year	Linseed oil yen	Perilla oil yen	Hempseed oil yen	Wood oil yen	Camellia oil yen	Other oils yen	Total yen
1924	2,044,161	1,900,467	281,086	133,215	1,563,764	4,687,174	40,537,366
1925	1,904,994	2,146,127	257,298	124,257	1,490,297	4,320,659	45,412,897
1926	1,520,004	1,774,963	205,567	154,724	1,184,771	4,753,063	44,233,310
1927	1,584,332	896,291	208,465	126,365	1,013,593	3,040,848	29,926,965
1928	2,733,100	1,107,100	261,197	108,559	814,459	2,974,879	41,092,703
1929	2,945,224	1,442,661	218,218	163,281	728,262	3,600,224	44,347,827
1930	1,077,673	2,422,152	207,218	93,713	599,905	2,339,477	34,102,586
1931	1,094,542	2,032,760	154,923	76,071	423,788	2,134,248	29,211,560
1932	1,015,617	2,858,802	152,654	153,716	336,860	2,434,947	31,944,837
1933	3,775,857	5,518,011	—	184,421	878,188	2,487,087	44,018,331

PRODUCTION OF ANIMAL OILS AND TALLOW BY MILLS EMPLOYING MORE THAN 5 PERSONS

Year	Cod oil yen	Herring oil yen	Sardine oil yen	Whale oil yen	Other oils yen
1924	141,619	—	1,914,608	—	—
1925	146,502	—	3,115,283	—	—
1926	221,601	—	4,733,725	—	—
1927	315,458	—	5,170,870	—	—
1928	242,209	—	6,067,595	—	—
1929	225,088	304,042	3,527,435	704,925	957,117
1930	285,862	137,295	3,491,551	517,520	473,179
1931	278,245	26,686	422,439	168,921	321,170
1932	95,774	59,296	802,350	614,915	1,147,833
1933	296,362	35,854	456,752	498,194	2,018,732

Year	Puna oil yen	Beef tallow yen	Pork tallow yen	Others yen	Total yen
1924	—	569,406	—	—	3,625,633
1925	—	626,710	—	—	3,890,273
1926	—	1,950,947	—	—	6,906,273
1927	—	2,050,180	—	—	7,536,482
1928	—	4,133,321	—	—	10,443,125
1929	136,939	1,624,843	144,662	197,814	8,833,065
1930	97,039	996,866	169,454	292,485	6,461,251
1931	67,000	712,033	160,981	196,883	2,354,356
1932	75,714	666,015	143,921	52,698	3,658,516
1933	90,439	859,306	312,733	508,665	5,077,037

PRODUCTION OF VEGETABLE WAX, CANDLES, AND MANUFACTURES OF OILS BY MILLS EMPLOYING MORE THAN 5 PERSONS

Year	Vegetable wax yen	Candles yen	Boiled oil yen	Hardened oil yen	Hardened wax yen	Oleine yen	Stearine yen	Total yen
1924	2,266,837	5,631,954	1,313,275	6,792,571	—	—	—	8,105,846
1925	2,079,947	5,827,257	1,476,339	7,427,574	—	—	—	8,903,913
1926	1,195,291	6,482,810	2,664,024	5,514,402	—	—	—	10,027,976
1927	2,877,735	5,334,372	3,351,349	6,676,627	—	—	—	14,834,735
1928	2,810,225	5,898,136	3,117,243	11,697,488	—	—	—	17,559,428
1929	1,497,875	5,175,200	3,319,275	12,124,719	1,061,950	880,688	219,425	13,884,576
1930	1,808,580	4,785,545	2,859,546	10,109,944	323,545	502,389	200,592	10,949,181
1931	1,293,719	4,471,845	2,756,897	7,175,041	517,986	419,309	213,321	15,713,722
1932	1,249,913	4,952,548	2,924,753	10,039,127	623,182	487,644	4,246,838	20,561,585
1933	1,440,017	5,410,628	3,339,737	13,594,028	513,571	552,401	2,561,846	20,561,585

IMPORTS OF OILS, TALLOW AND MANUFACTURES THEREOF

Year	Olive oil yen	Beef tallow yen	Stearine yen	Oleine yen
1924	109,000	6,993,000	205,000	129,000
1925	165,000	5,941,000	158,000	120,000
1926	155,000	6,324,000	203,000	212,000
1927	161,000	5,025,000	192,000	222,000
1928	125,000	5,407,000	271,000	109,000
1929	245,000	5,019,000	337,000	215,000
1930	123,000	3,894,000	242,000	112,000
1931	182,000	2,481,000	189,000	100,000
1932	327,622	2,453,516	171,751	73,998
1933	357,324	3,411,534	112,541	51,395
1934	563,411	3,380,160	161,671	32,957

EXPORTS OF OILS, WAX, AND MANUFACTURES THEREOF

Year	Perilla oil yen	Bean oil yen	Rapeseed oil yen	Fish oil yen	Whale oil yen	Vegetable wax yen	Hardened oil yen
1924	—	1,390,000	781,000	3,176,000	—	2,485,000	—
1925	—	2,878,000	1,546,000	4,127,000	—	1,414,000	—
1926	—	3,045,000	6,038,000	4,485,000	—	1,526,000	—
1927	—	1,704,000	5,863,000	7,480,000	—	2,339,000	—
1928	—	1,625,000	2,105,000	7,941,000	220,000	2,088,000	2,017,000
1929	—	2,236,000	4,316,000	7,722,000	43,000	2,255,000	2,006,000
1930	—	4,859,000	4,672,000	7,600,000	361,000	1,870,000	3,987,000
1931	803,000	1,049,000	1,963,000	1,797,000	146,000	1,154,000	2,997,000
1932	1,100,000	1,010,000	1,308,000	2,768,000	466,000	1,177,101	4,221,000
1933	3,532,000	342,000	2,245,000	2,397,000	131,000	1,189,000	4,939,000
1934	3,709,000	623,000	5,024,000	3,150,000	155,000	1,258,000	5,042,000

Rubber

Introduction

The rubber industry in Japan began with the establishment in 1886 of the Mitsusuchi Rubber Company, a limited-partnership concern, in Tokyo. The industry developed steadily through the Sino-Japanese and the Russo-Japanese Wars of 1894-1895, and 1904-1905. In 1909 there were 20 mills, 900 workers and production reached ¥4,000,000 in value. During the World War the industry further developed. The earthquake of 1923 destroyed about 80% of the rubber manufacturing capacity of Tokyo and Yokohama districts, and many people were gravely doubtful as to whether the rubber factories in those districts would ever revive, but reconstruction quickly took place and the factories rebuilt. In 1933 the total production in the country by mills employing more than 5 persons was as large as ¥86,704,950 in value, but the figure would be much larger if we include goods produced by people working in their own homes. The number of mills employing more than 5 persons in 1933 was 748, and the number of workers 37,974. Hyogo, Tokyo and Osaka

prefectures are the chief producing centres. Production in these and other important prefectures in 1933 was as follows:

Hyogo	¥28,651,980
Tokyo	19,238,267
Osaka	13,418,820
Hiroshima	3,045,704
Miyé	1,808,520
Okayama	1,378,147
Kanagawa	6,273,873

Present Condition of the Industry

Until 1920 Japan had to import the major portion of the rubber goods she required, but the industry has now developed to the extent that imports have been reduced to a small quantity. The 1934 year import of gutta percha amounted to ¥57,337,000 in contrast to ¥29,685,000 for 1933 and ¥15,988,000 for 1932. The 1934 year exports totalled ¥37,626,000 against ¥28,193,000 for 1933 and ¥14,960,000 for 1932.

The chief articles produced are tyres, rubber shoes, toys, tubes, electric battery cases, etc. The total amount of production of rubber manufactures reached ¥86,704,000, in 1933. The following table gives statistics for mills employing more than five persons only.

PRODUCTION OF RUBBER MANUFACTURES IN JAPAN

Year	Soft Rubber Manufactures		Toys in ¥1,000	Tyres and accessories in ¥1,000	For machinery in ¥1,000
	Shoes and other footwear No. pairs in 1,000 units	Value in ¥1,000			
1924	14,655	12,609	3,883	—	—
1925	11,742	13,922	3,437	—	—
1926	15,080	15,858	2,699	—	—
1927	17,171	18,153	3,064	—	—
1928	26,143	21,306	2,517	—	—
1929	37,913	24,934	2,318	25,753	2,126
1930	47,290	20,379	2,313	19,285	1,420
1931	32,266	15,929	3,320	19,494	636
1932	34,294	17,352	5,027	24,080	1,173
1933	40,867	21,827	5,562	32,826	1,000

Year	Soft Rubber Manufactures				Hard rubber manufactures in ¥1,000	Grand total in ¥1,000
	Belts in ¥1,000	Rubber pipes in ¥1,000	Others in ¥1,000	Total in ¥1,000		
1924	—	—	—	49,328	2,617	51,946
1925	—	—	—	52,360	3,270	55,630
1926	—	—	—	54,834	3,765	58,600
1927	—	—	—	63,283	2,772	66,056
1928	—	—	—	69,075	1,195	70,270
1929	4,698	1,318	9,859	74,371	1,727	76,598
1930	4,576	1,972	9,551	59,563	1,203	60,766
1931	4,005	1,747	9,898	54,992	1,112	56,104
1932	4,438	2,191	10,563	64,827	1,054	65,882
1933	5,662	2,989	16,061	84,981	1,722	86,704

Imports and Exports

The importation of rubber manufactures is decreasing each year. Tyres for automobiles, hose, belting for machinery, old rubber, etc., are the principal imports, but hose and belting of domestic manufacture are rapidly replacing the imported articles. On the other hand, the exportation of rubber manufactures is developing rapidly, especially in the case of rubber shoes.

Cultivation of Gum Trees

Plantation work by the Japanese was started as early as 1906 in the Malay States, and was later extended to Sumatra, North Borneo and other places. Soon afterwards a great interest was taken in the industry, Japanese investments quickly grew, and the work that was originally started as a private enterprise is now mostly carried on by joint stock companies.

IMPORTS OF RAW RUBBER AND EXPORTS OF PRINCIPAL RUBBER MANUFACTURES

Year	Import of Raw Rubber	Exports of Principal Rubber Manufactures (unit in yen)		
		Boots and shoes	Tires for rikisha bicycles and other vehicles	toys
1926	40,507,000	—	—	—
1927	34,635,000	—	—	—
1928	28,252,000	—	—	—
1929	34,130,000	—	—	—
1930	17,930,000	—	—	—
1931	13,183,000	4,894,000	3,857,000	2,198,000
1932	15,988,000	4,889,000	4,377,000	5,506,000
1933	29,685,000	8,215,000	8,839,000	8,633,000
1934	57,337,000	3,332,000	9,994,000	6,406,000

JAPANESE RUBBER PLANTATION IN SOUTH SEA ISLANDS*

(At the end of June, 1933)

Districts	Land leased acres	Area of Plantation Completed		Total acres	Quantity of rubber avail- able tons	Actual produc- tion tons
		Area where raw rubber available acres	Where raw rub- ber not yet available acres			
Malay Peninsula	96,272	53,040	10,959	63,999	10,056	8,926
Sumatra	290,738	16,655	5,856	22,411	2,705	2,048
Borneo	45,890	8,221	4,412	12,633	1,816	1,515
Java	42,946	3,539	1,063	4,602	757	638
Sarawak	7,184	3,693	1,280	4,973	644	567
British Borneo	31,925	11,931	1,291	13,222	2,067	1,585
Philippinea	50	50	—	50	13	13
Total	514,505	97,029	24,861	121,890	18,058	15,292

* The report of the Nanyo Saibai Kyokai (the South Seas Islands Plantation Association).

Celluloid

General

The Japanese celluloid industry made considerable development during the World War. Owing to a heavy demand coming from European countries, where factories were closed by the War, Japanese celluloid products once dominated the world's markets, but with the termination of the War foreign products quickly regained their position in the markets captured by Japan during the War, and for some years the industry was in a state of depression. Gradually penetration was effected by traders and exporters, and overseas markets were largely restored, especially after the replacement of the gold embargo in December, 1931. The domestic market has been prosperous for many years, without being affected very much by changes in economic conditions.

Japanese celluloid products are mainly exported to America, England, South America and Australia. They are now exported to Europe and Africa, in competition with German products, the most formidable rivals. As long as the exchange rate is low and tariff walls are not raised, the export trade is destined to be

prosperous.

Celluloid manufacturing is one of the most promising industries in Japan, with total production amounting to ¥24,202,000 and exports reaching ¥14,494,000 in 1934, but it is faced with one great difficulty, that of obtaining its chief material cheaply. Camphor is the material, but as this is restricted by monopoly law its price is kept fairly high.

The greatest assets the celluloid industry in Japan has are its overseas markets, markets that are expanded yearly, cheap labour, exquisite technique and advantages in the acquisition of raw materials.

The Dai Nippon Celluloid Kaisha is the largest manufacturer. 75 per cent. of the total production in Japan comes from this company, while the remaining 25 per cent. is divided among about ten manufacturing concerns, all of small scale. The company, which has a virtual monopoly of celluloid manufacturing in this country, concentrates its energies on exporting. Nearly 80 per cent. of Japan's total exports of celluloid are the produce of this company.

The company, at a cost of ¥2,000,000, has started manufacturing films at

Ashigara at the foot of Mount Hako-né. The films were placed on the market during 1933, and it is expected that imports, which used to amount to about ¥5,000,000 annually, will largely decrease from 1934 onwards. Cellophan is manufactured

at the Kanzaki factory of the Dai Nippon Celluloid Company, and is now procurable at very low prices.

Statistics Production of raw celluloid, celluloid manufactures, and exports of the same follow:

PRODUCTION OF CELLULOID BY MILLS EMPLOYING MORE THAN 5 OPERATIVES

Year	Raw Celluloid		Manufactures of Celluloid			Total in ¥1,000	Grand total in ¥1,000
	Qty in metric tons	Value in ¥1,000	Toys in ¥1,000	Combs in ¥1,000	Others in ¥1,000		
1924	3,020	9,938	1,207		4,555	5,762	15,701
1925	3,801	12,664	984		3,440	4,427	17,092
1926	3,650	9,848	1,971		3,988	5,960	15,808
1927	3,414	9,372	1,539		3,125	4,665	14,037
1928	3,989	10,992	1,724		3,825	5,550	16,542
1929	5,806	12,278	2,025	535	4,668	7,229	19,508
1930	4,146	8,029	1,757	364	2,193	4,315	12,345
1931	4,847	7,800	861	393	1,347	2,602	10,403
1932	5,700	7,974	1,040	1,056	2,145	4,242	12,217
1933	8,893	16,674	2,628	1,508	3,395	7,527	24,202

EXPORTS OF RAW CELLULOID AND MANUFACTURES THEREOF

Year	Raw Celluloid		Celluloid Manufactures			Total in ¥1,000	Grand total in ¥1,000
	Qty in metric tons	Value in ¥1,000	Toys in ¥1,000	Combs in ¥1,000	Others in ¥1,000		
1924	109	371	2,718	466	584	3,769	4,140
1925	115	399	4,265	696	510	5,472	5,872
1926	48	168	4,545	602	795	5,944	6,113
1927	77	208	4,077	715	840	5,632	5,841
1928	98	249	4,229	785	1,015	6,030	6,280
1929	208	396	5,572	963	1,834	8,370	8,767
1930	161	298	4,423	631	1,267	6,322	6,621
1931	304	504	3,041	763	920	4,725	5,230
1932	511	875	2,527	1,467	1,494	5,490	6,366
1933	1,320	2,363	3,178	3,110	2,346	8,635	11,813
1934	1,804	3,303	3,708	4,260	3,223	11,191	14,494

Note: Incongruity in the figures of celluloid manufactures in the production and exports tables is due to the fact that a large amount of celluloid manufacture is produced by mills where less than 5 persons are employed.

Matches

The Industry in the Past

A factory for making matches was first established in Japan, in Tokyo, in April, 1875, by a certain Mr. Makoto Shimizu, who had just returned from studying the subject in a French technical school and a match factory managed by the French Government. In the same

year a factory was established in Osaka, and in 1877 another was established in Kobé. In 1878, three years after the first factory was established matches to the value of ¥24,000 were exported, and in succession factories were established in Shizuoka, Aichi, Osaka and Hyogo prefectures. By 1889, not only had the importation of matches ceased,

but large quantities, in face of strong foreign competition, were being exported to China. In 1887, Hyogoken Match Seizogyo Kumiai (Association of Manufacturers of Matches in Hyogo prefecture) was formed and in 1900 the Dogyo Kumiai (Association of Traders in Matches) was organized. The industry experienced great prosperity during the Russo-Japanese War, exports were made not only to China but also to the South Sea Islands, Straits Settlements and India. But from about that time the match industry began to develop in China and by 1908 it had developed to the extent that the market in China was considerably curtailed for the Japanese product, then when India raised her tariff on matches, and the Dutch East Indies imposed a consumption tax on them, exports of matches to countries in the Orient were considerably reduced. Exports for some time became almost negligibly small until they picked up in 1933, in which they suddenly increased to ¥3,248,000 from about ¥938,000 of 1932.

Present State of the Industry

There are about 140 match factories in Japan, the annual output of matches being 400,000 cases, one case containing 600 dozens. Of the total production, 220,000 cases are exported to the colonies, while 180,000 cases are consumed at home.

The development of our match industry during the World War was such as to make the industry a menace to the International Match Company. This company, therefore, commenced negotiations with and was successful in amalgamating the Nippon Match Manufacturing Co., Ltd., which was one of the Mitsui interests, and the Nippon Match Co. came under foreign management for three years, that is, until 1927, when

the largest match manufacturer in Japan, the Toyo Match Co., Ltd., seeing the advantages which would accrue from co-operation with the International Match Company agreed to amalgamation. The Daido Match Co., Ltd. (The Great Consolidated Match Co., Ltd.) was organized with capital equally subscribed by Japan and Sweden, and the management was placed in Japanese hands, avoiding in this way competition in foreign markets. In Japan about 15% of the factories do not yet belong to the company, and it is necessary for the company to co-operate with these factories in order to keep up the market.

Exports The match manufacturing industry in Japan has revived since the death of Ivar Kreuger, former Swedish match magnate, in 1932. Exports increased along with the development of the industry and even in 1913 Japan's match exports totalled some ¥12,000,000 after meeting the domestic demand. During the World War annual exports were between ¥30,000,000 and ¥40,000,000, forming one of the big ten export items of Japan.

Ivar Kreuger placed the Far Eastern market under his sway after the War. Through the Swedish International Match Corporation he purchased the Japan Match Company and several other manufacturing concerns. The remaining Japanese match makers could not withstand this competition, and in 1927 had to surrender to the Swedish match influence. The export volume in 1932 went off to as low as ¥938,000 from ¥1,408,000 in 1931 and ¥1,965,000 in 1930.

Exports during the first 11 months of 1933 suddenly rose to nearly ¥3,000,000. The downfall of Swedish match interests following the sudden death of Kreuger liberated the Japanese match industry from the con-

rol of foreign capital. Exports last year were made to China, India, South Seas and other points. The 1931 output in Japan was worth ¥7,924,000, of which Hyogo prefecture manufactured ¥6,638,000, or 84 per cent. Last year's production of matches and allied articles by mills employing more than 5 operatives is roughly estimated at about ¥11,000,000 for Japan.

When the Japanese match industry was influenced by Swedish interests the export field was limited to China and part of the South Seas. America, Australia, the Near East, Africa and Europe was monopolized by Swedish interests. After Kreuger's downfall Japanese match exporters took back their old markets. With the replacement of the gold embargo Japanese products have found their way in heavy volume to their old markets. The low exchange rate and cheap labour in Japan have stimulated exports.

Exports in 1933 and 1934 follow:

EXPORTS OF MATCHES

Destinations	1933	1934
Manchoukuo	43,000	38,000
Kwantung	44,000	69,000
China	1,000	3,000

PRODUCTION OF MATCHES, ETC.

Year	Quantity produced gross	Value yen	Match-boxes	Matchwood
			yen	yen
1922	28,027,173	18,949,279	11,393,910	3,404,952
1923	24,196,708	14,811,402	1,536,544	2,747,792
1924	24,786,995	15,796,641	1,459,027	1,879,584
1925	24,139,266	16,987,560	1,256,968	2,558,545
1926	24,087,312	15,667,221	1,111,140	1,566,661
1927	3,301,575	14,540,033	1,217,350	2,202,373
1928	19,471,637	12,445,793	741,202	1,383,046
1929	21,607,683	9,825,495	1,358,616	1,220,148
1930	16,722,653	7,464,081	645,765	600,047
1931	13,535,353	6,686,245	457,067	701,334
1932	18,234,683	7,306,721	764,905	613,939
1933	20,711,239	9,202,221	1,169,029	710,525

destinations	1933	1934
Hongkong	154,000	954,000
British India	88,000	83,000
Straits Settlements	234,000	401,000
Dutch India	107,000	110,000
French Indo-China	12,000	—
Asiatic Russia	136,000	111,000
Great Britain	30,000	22,000
Holland	44,000	158,000
U. S. A.	1,947,000	446,000
Hawaii	67,000	72,000
Others and total	3,248,000	2,928,000

Number of Factories The number of match factories in Japan was 143 at the end of 1933, according to the Factory Statistics of the Ministry of Commerce and Industry. Workers employed in them numbered 8,150, of whom male workers totalled 2,467 and female workers 5,683. Details were:

	No. of factories	No. of workers
Employing fewer than 10 workers	46	228
between 10-15	14	166
" 15-30	27	552
" 30-50	15	612
" 50-100	17	1,219
" 100-200	15	2,054
" more than 200	7	2,285

Production of matches and allied articles in recent years has been as follows:

Dyestuff

Through Governmental protection extending over many years, the Japanese dyestuff industry is now well established. Self-sufficiency will be only a matter of time, for within recent years this industry has been gaining momentum among the other industries of the country. Japan supplies 99 per cent. of all sulphuric dyes demanded domestically. Concerning ratios of high-grade dye supplies, Japan can supply 86 per cent. of miscellaneous dyes, 49 per cent. of acid dyes, 35 per cent. of mordant dyes and 26 per cent. of vat dyes for internal use. Coal-tar dyes were already exported in 1934 to the volume of 7,023 metric tons worth

¥4,259,000. Naphthol and Indanthrane dyes, which are not manufactured here, Japan gets from Germany. Consumption of these dyes is approximately 150,000 kin worth about ¥3,000,000. Research in producing these dyes is underway by the Mitsui Mining and Japan Dyestuff Manufacturing Companies. Notwithstanding all this domestic activity, Japan still imports a large volume of dyes. Vat colour imports were especially notable because Mitsui Mining produced mostly artificial indigo. Imports of dyestuff in 1934 were ¥9,147,000 in value, and showed an increase of ¥1,080,000 over 1933, details of which follow:

IMPORTS OF DYESTUFF IN 1934

Colours	1933		1934	
	Amount (kin)	Value (¥1,000)	Amount (kin)	Value (¥1,000)
Basic	186,293	1,285	176,347	979
Direct	473,415	1,991	573,627	2,403
Acid	295,023	1,355	378,490	1,669
Mordant and intermediate	870,773	1,354	366,051	1,353
Sulphuric	116,885	433	142,363	427
Vat	121,284	1,465	147,465	2,147
Others	56,582	156	55,064	169
Total	1,620,255	8,060	1,839,407	9,147

The average price of these imported dyes in 1934 was ¥8.59 per kilogramme, against ¥8.29 in 1933 and ¥4.57 in 1932. As long as the exchange rate remains at about \$30 and the activity of rayon industry

lasts, the demand for dyes will continue in heavy volume. The domestic production of dyes during 1933 compared with the preceding four years and exports of Japan-made dyes since 1926, follow:

PRODUCTION OF SYNTHETIC DYESTUFFS

Year	Basic		Direct		Acid		Mordant	
	Qty in 1,000kg.	Value in ¥1,000	Qty in 1,000kg.	Value in ¥1,000	Qty in 1,000kg.	Value in ¥1,000	Qty in 1,000kg.	Value in ¥1,000
1929	308	1,136	715	2,194	328	931	46	209
1930	347	1,265	608	1,915	217	671	36	177
1931	479	1,617	744	2,032	247	691	40	161
1932	608	2,415	1,243	3,589	425	1,518	91	263
1933	717	4,069	1,633	5,707	522	2,249	33	220

PRODUCTION OF SYNTHETIC DYESTUFFS

Year	Sulphide		Artificial indigo		Vat Colours		Others and total
	Qty in 1,000kg.	Value in ¥1,000	Qty in 1,000kg.	Value in ¥1,000	Qty in 1,000kg.	Value in ¥1,000	
1929	7,408	2,903	57	236	9	60	8,924
1930	6,745	2,445	68	229	12	71	7,891
1931	7,392	2,208	117	433	33	122	8,378
1932	10,609	4,602	193	771	45	259	15,369
1933	11,816	5,721	594	2,327	65	445	23,983

PRODUCTION OF ANILINE AND INTERMEDIATES

	Aniline		Others and total in ¥1,000
	Qty in 1,000kg	Value in ¥1,000	
1929	3,214	2,050	6,931
1930	2,337	1,615	4,655
1931	2,127	1,242	4,333
1932	2,440	1,591	5,802
1933	2,995	2,600	10,057

EXPORTS OF DOMESTIC DYESTUFFS

	Amount (Metric tons)	Value (¥1,000)
1926	474	324
1927	490	291
1928	1,166	580
1929	811	360
1930	2,085	820
1931	2,011	509
1932	4,521	1,522
1933	6,125	2,895
1934	6,423	4,259

The Government on March 16, 1933, raised the customs tariff on import dyes by 5 per cent. uniformly for protection of home products.

The Industry in 1934

Trend in General The prosperity of the industry continued throughout 1934. Plans to increase production by various companies, which were started in 1932, were completed by the end of 1933. Fur-

ther plans to increase production were launched in 1934, the substance of these new plans being such in nature as to promise a great development of the industry in future. The Japan Dyestuff Manufacturing Co. is building mills in Yodogawajiri and Nishijima, while several other chemical industrial concerns are also planning to build dyestuff mills. Another noteworthy event was that the Mitsubishi interests which have been studying dyestuff for many years at last materialized their plans, for the Mitsubishi Mining Co., Ltd. established the Japan Tar Industry Co. on joint account with the Asahi Glass Co., Ltd. and their new mill in Yawata City in Kyushu has already started operation. On the other hand, plans to make Japan self-sufficient with regard to the supply of principal intermediates by those who have been hitherto exclusively engaged in dyestuff industry, have materialized to some extent.

Market Tendency The typhoon which swept the Kwansai districts in the fall gave considerable damages to dyestuff mills in those districts. This checked the downward tendency of the market which had been kept on ever since the early part of the year. Market prices follow:

MARKET PRICES OF DYESTUFFS

In 1934			
	Black direct 36% per kin in yen ¹	Black sulphide per 100 kin in yen ²	Blue vat per 100 lbs in yen ³
Jan.	1.85	46.00	271.67
Feb.	1.85	46.00	271.85
Mar.	1.60	41.00	272.00

Apr.	1.60	37.00	272.00
May	1.60	37.00	272.00
June	1.60	34.00	272.00
July	1.60	34.00	272.00
Aug.	1.60	34.00	282.00
Sept.	1.60	34.00	282.00
Oct.	1.75	38.00	282.00
Nov.	1.75	38.00	282.00
Dec.	1.75	38.00	282.00

Aluminium

The first aluminium manufacturing plant in Japan was erected at Omachi, Nagano prefecture, in December, 1933. The Japan Electric Industry Company, formerly known as Japan Iodine Company, runs it. This concern also built the first alumina factory at Koyasu, Yokohama, in the spring of the same year. At the Koyasu factory Korean alum is used for making 20 metric tons of alumina a day. Alumina is sent to the Omachi factory, where 10 tons of aluminium is manufactured. The production cost of alumina is ¥1,000 per metric ton. This factory has yearly productive capacity of 3,600 tons, but Japan's annual demand is 10,000 to 12,000 tons, which used to be entirely imported from abroad. The capitalization of this company is ¥12,000,000. Another alumina manufacturing plan has been advanced. Anticipating completion of the Jitsugetsutan Power Station in June by the Taiwan Electric Power Company, an aluminium manufacturing company capitalized at ¥10,000,000 will be founded in Formosa in June, 1934. Establishment is taking place under joint management of the Mitsui, Mitsubishi, Sumitomo and Furukawa interests. Power totalling 50,000 kw. out of 100,000 kw. to be generated by the Jitsugetsutan Station will be supplied by the Taiwan Electric organization. Promoters of the prospective company have carried on exhaustive researches into the manu-

facture of aluminium during the past year and have found a practical method to produce it, which is however being kept an absolute secret. The factory will be erected in Takao province, Formosa, and material which is bauxite will be imported from Borneo, Korea, the Malay Peninsula and Brazil. Approximately 50,000 kw. of electricity will be had from Taiwan Power and in the first year the firm plans to have an output of 2,000 tons of aluminium, which will be boosted to 20,000 tons in the future. This metal will be supplied to various industrial plants throughout Japan. When the annual production reaches 20,444 ton level, Japan will be self-sufficient as regards this metal. In order to clinch their market in Japan, the International Aluminium Cartel, controlled by the Mellon interests in the United States, has reduced the selling price of aluminium in this country to ¥1,500 per ton. The production cost of Japanese aluminium is estimated at about ¥1,200, or ¥1,300, a ton, while that of foreign aluminium is much lower. The Mitsubishi Mining Company has decided to go into the manufacture of aluminium zinc and oil, using hydrogenation process for the latter. The company will use its large profits on coal, copper and gold to finance the expansion. Experiments have

¹ Product of Japan Dyestuff Manufacturing Co., Ltd.

² Product of Mitsui Mining Co., Ltd.

³ Product of I. G.

been completed and the experts in charge are convinced of their ability to make each of the new enterprise a success. The aluminium industry will be the first to be tried. Korean alum shales will be used in a special process worked out by the

company. A factory will be built near the Miuta Coal Mine, Hokkaido, which the company operates, together with a steam power generating station capable of 30,000 or 40,000 kw.

Pyrethrum

Hokkaido is noted for producing pyrethrum flower, which is used as material for anti-insect powder in foreign countries. Pyrethrum is manufactured into powder by American companies after it is exported there, where it is largely used for mosquito incenses and anti-bed bug powder. The direct shipment from Hokkaido was made in September, 1933. Pyrethrum was formerly exported through Kobé merchants, but, owing to inconveniences, the Hokkaido Government encouraged direct shipments from Hokkaido to America. The Hokkaido Government caused pyrethrum manufacturers to organize the Manufactured Pyrethrum Industrial Guild, as the first step to the export of manufactured pyrethrum abroad. Hitherto, this was exported in the shape of dried flower. As international goods, manufactured pyrethrum is steadily gaining ground. Under encouragement of

that Government, Hokkaido pyrethrum raisers are manufacturing it for direct export. Not only the United States but South Seas markets such as Saigon, Bangkok, Rangoon, Manila, Singapore, Sourabaya and Batavia, Indian markets including Calcutta and Bombay and European market such as London, Hamburg and Paris demand product. Wakayama prefecture is also noted for raising pyrethrum flower. Production and exports of pyrethrum in the last several years follow:

PRODUCTION AND EXPORTS OF PYRETHRUM

Year	Production		Exports	
	Qty in 1,000kg	Value in ¥1,000	Qty in 1,000kg	Value in ¥1,000
1930	5,979	3,249	—	—
1931	5,147	2,627	43,845	1,681
1932	5,107	3,730	94,678	4,752
1933	6,061	7,800	84,808	6,349
1934	—	—	93,848	7,447

Survey of Industrial Activities in Japan in 1934

New Capital Amount of capital absorbed by different kinds of manufacturing industries is detailed in the table given below. New capital invested in 1934 amounted to ¥1,565,159,000, it including those invested in new establishments, payment for this increased capitalization and in debentures. About 62 per cent. of the total, or ¥977,589,000 were invested in manufacturing industries. If the amount

invested in electric and mining industries were included the sum would reach ¥1,212,901,000 or more than 77 per cent. of the total amount, and shows how industrial activities in Japan in 1934 centred around the manufacturing industries. The table given below is prepared from the Commercial Register, and shows that expansion of metal, machine manufacturing, cement, chemical, and textile industries are specially remarkable:

INCREASE IN CORPORATE CAPITAL PAID-UP
in 1933 and 1934
(Compiled by the Bank of Japan)
(in ¥ 1,000)

	1933				1934			
	New In- corpora- tions	Addition- al Shares issued	Unpaid Capital called	Total	New In- corpora- tions	Addition- al Shares issued	Unpaid Capital called	Total
Total	331,851	387,974	250,662	970,488	773,201	336,054	455,902	1,565,159
Manufacturing Total	85,620	251,794	109,428	446,843	544,136	172,734	260,728	977,599
Gas works	325	13,000	797	14,122	681	—	4,605	5,286
Spinning	2,759	6,975	7,615	17,349	10,650	15,052	18,478	44,180
Silk-reeling	8,954	2,895	1,382	13,232	1,345	3,689	7,847	12,882
Weaving	7,168	6,840	9,617	23,626	7,421	19,517	11,925	38,863
Dyeing	1,036	295	865	2,198	2,776	3,166	2,174	8,117
Paper	1,110	64,525	1,359	66,995	904	1,622	20,258	22,685
Chemicals	20,924	40,308	29,484	90,717	55,165	36,396	51,786	143,347
Machines & Tools	15,541	15,888	7,787	39,211	38,022	33,115	42,120	113,858
Shipbuilding & Dock	—	62,750	1,550	64,300	200	6,925	20,906	28,031
Cement, Ceramics, Glass, etc.	1,437	623	4,229	6,298	7,406	4,085	8,982	20,474
Metal-works	9,058	9,310	32,277	50,646	388,910	31,268	50,280	470,459
Brewing	7,619	11,782	2,345	21,746	6,747	3,398	1,058	11,179
Foods & Drinks	3,696	11,689	7,756	23,142	11,257	3,991	15,050	30,298
Timbering	879	110	176	1,165	1,960	2,514	974	5,457
Others	5,110	4,805	2,184	12,100	10,180	7,987	4,300	22,468

Principal Companies Earnings of manufacturing industries in the latter half of 1934 was 15.5 per cent. as compared with 14. per cent. in the corresponding period of the year before, and showed an improvement of 1.5 per cent., although, earnings of a considerable number of companies decreased, some of them having been forced to reduce dividend. It is generally thought that the earnings of manufacturing industries reached the peak in 1934.

Demand on Labour According to the investigation made by the Bank of Japan, the index number of labour at the end of 1934 was 95.5 and made a steady gain since January without a break. The index number of wage rate was 82.2 at the year end. Though this was slightly lower than 84.1 of January, the index number of earnings of the total labour was 95 at the year end as compared with 87.8 of January, and shows how busily the manufacturing industries were kept. Especially the index number of labour in machine manufacturing,

shipbuilding, rolling stock, metal industries as well as that of textile industry and those making goods for exports showed a great increase over 1933. A table illustrating this follows:

INDEX NUMBERS OF EMPLOYMENT AND WAGES
(Average for 1926=100)

Year	Employ- ment	Wage rates	Earnings By all labourers
1931 average	74.4	91.3	90.7
1932 ..	74.7	88.1	85.1
1933 ..	81.9	85.1	89.2
1934 Jan.	86.2	84.1	87.8
.. Feb.	86.7	83.7	92.0
.. Mar.	87.8	83.5	94.0
.. Apr.	90.5	83.0	90.8
.. May	91.0	82.8	90.7
.. June	91.2	82.7	90.5
.. July	91.6	82.8	89.6
.. Aug.	92.1	82.7	89.7
.. Sept.	93.5	82.6	90.9
.. Oct.	94.1	82.6	91.1
.. Nov.	94.9	82.3	92.4
.. Dec.	95.5	82.2	93.9
1934 average	91.3	82.9	91.2

Damages by Typhoon The damages sustained by the typhoon and flood, September 21, 1934, to manufacturing industries in Osaka prefecture were very severe. According to investigations made by the prefecture, the number of mills damaged was more than 1,200 which affected more than 117,000 officials and operatives. The damages of mills without reference to the loss which arises from inability to operate amounted to ¥27,929,000. Details follow:

Descriptions	No. of mills	Damages in ¥1,000
Dyeing and textile	373	6,300
Machinery	368	14,910
Chemical	312	5,345
Foodstuff	65	325
Miscellaneous	93	792
Specific	19	245
Total	1,230	27,929

The above-mentioned figures apply only to those mills which come under the factory law. If, therefore, small industries run on domestic basis, to which the law does not apply, were included, the figures would be much larger.

The percentage of damages as against the total capacity in Osaka prefecture was 12.8 per cent. in number of mills, and 47.8 per cent. in number of officials and operatives. It was estimated that operation of damaged mills would begin after two months and the complete revival of production would take six months.

As regards the loss which is due to mills' inability to operate, it was estimated that 51 per cent. of production capacity of Osaka city and 43.9 per cent. of capacity of local districts, or 49.6 per cent. of the total capacity of the whole prefecture, which corresponds with 8.6 per cent. of the country's total production capacity, was damaged.

Extension of Production Capacities The year 1933 was a year in which extension of production capacities

in almost all lines of industries was undertaken. It is true that this tendency was continued in 1934. But the year 1934 was reserved to see what the result of extension of capacities would be. In most instances demands were good, and in some cases such as in steel industry, which increased production by about 30 per cent., supply was not enough and the price was steadily upward.

On the other hand, industry like cement seems to have gone too far, and was forced to curtail production by as large as 57 per cent., while its market was disturbed through the competition between its cartel and the outsiders. Rayon industry, the production of which totalled as much as 1,370,000 cases, was scarcely able to dispose of the product through exports, its market sharply declining through the fear that its export would be barred abroad as well as the approach of opening of operations of newly established mills.

Cartels and Rationalization Policy The industrial rationalization policy of the Government has had its effect upon many industries. It also had bearing on bringing forth some new cartels and strengthening the old ones. Many of these cartels, such as those of steel, beer, paper, coal, petroleum, cement, and rayon were active. But control of these cartels was, in many instances, weakened by the activities of the outsiders and many of them were forced to realize the importance of further strengthening their organization.

However, where the strength of a cartel was really felt, there arose sharp criticism against it, or a claim lodged by the consumer, due to pulling up of price by the cartel, or withholding delivery of goods desired. In the instance of the steel industry, the Japan Iron Manufacturing Co., Ltd. was born as the result of the Government's rationalization

policy. The control exercised by this company was effective. But it produced an effect which the Government could not foresee. The supply of steel put up by the company was not large, which resulted in the high price of steel materials. Consumers were pressed very hard, and the movement for reducing the price of steel materials drew attention of the public, which caused the Government to contemplate to lower duty on steel. Troubles of similar nature arose in fertilizer industry, where the supply of ammonium sulphate became short, and a dispute arose between the fertilizer cartel and the representatives of farmers as to the import of this fertilizer. In the case of paper industry, the monopolistic control of the cartel was directly opposite to the interest

of the newspaper and magazine people, while in beer, sugar and confectionery industries the cartels aroused a suspicion of the masses. These disputes almost always arose in connection with the question of prices, and the number of them increased as the time progressed and the acuteness intensified.

Under these circumstances, the policy of the Government to effect the rationalization through the control of various industries by cartels met a great stumbling block and the Government has been forced to conceive a new idea to change the original policy of enhancing cartels into that of regulation of cartels, and various laws were prepared with a view to carrying this new idea into effect.

CHAPTER XXIV COMMUNICATIONS

General

The communications of the country are supervised by the Minister of Communications and a special account is established for the management of this business, beginning with the fiscal year 1934-1935. General condition of the business in Japan proper in 1933-1934 may be obtained from the following:

Post, telegraph and telephone officials	178,524
Post, telegraph and telephone offices	12,782
Postage stamp sale agencies	69,341
Post boxes	75,649
Postal stations	10,822
Ordinary mail	
Ordinary mail routes	90,176 km.
Ordinary mails, acceptance	4,357,325,600

Ordinary mails, delivery	4,402,200,835
Parcels,	
Parcel post routes	90,210 km.
Parcels, acceptance	61,240,842
" delivery	57,762,972
Telegraph,	
Telegraph stations	7,948
Telegraph routes	51,668 km.
Telegraph lines	371,876 "
Telegraph apparatuses	10,511 sets
Telegrams, despatched	57,767,114
" arrival	60,085,863
Telephone,	
Telephone stations	6,531
Public telephones	2,977
Telephone subscribers	796,538
Applicants for the same	159,302
Telephone routes	67,018 km.
Telephone lines	6,045,985 "
Telephones	875,157
Telephone messages	3,434,522,844
Income from postage and fees	¥261,715,228
Expenditure	¥143,093,918

The Postal Service

Historical Survey

The present state postal service system was established in 1871, between Tokyo and Osaka. In August of that year, post offices were opened in Niigata, Hakodaté, Kobé, Nagasaki, and Yokohama. In December a new postal route was established between Tokyo and Nagasaki, connecting the two cities in 7 days and 17 hours. In May, 1872, the postal service between Yokohama and Tokyo was greatly improved by the establishment of five deliveries a day, and by July the service was extended to all the cities and towns of importance throughout the country, except a part of Hokkaido.

Foreign Mail Opens In March, 1872, a foreign mail service was opened at the same time as the establishment of official postal regulations. In those days, foreign mail matter in Japan was handled with the aid of the British, American, and French post offices in Yokohama, Kobé and Nagasaki. Soon after the conclusion of the America-Japan Mail Service Treaty in 1873, the American post offices were withdrawn from this country, and Japan was thus placed on an equal footing with the U. S. A. as regards the mail service between the two countries. In 1877, an arrangement was made with twenty-five countries participating in the International Mail Service Treaty. Thereupon, the British and

the French post offices were also withdrawn from this country.

The post offices were at first classified into five grades, and in March 1886, they were classified into three as at present. In view of the development of telephone and telegraph business, the authorities introduced a revision in the system of the Communications Department in 1908, and divided post offices into post, telegraph, and telephone offices each of them being classified into 1st, 2nd and 3rd, or 1st and 2nd in the case of telephone offices. With the rapid increase in the amount of mail matter and telephone and telegraphic messages, the regulations of the Communications Department as to the number and kind of offices, were extended from time to time, and at present there are offices in warships, steamers, trains, etc., in addition to the network throughout the country.

The air mail service was commenced in 1929 with the establishment of the Japan Air Transport Company in April of the same year.

The Growth The rapid growth of the postal service in the early years is illustrated by the following statistics:

Year	No. of P. O.
1871	180
1872	1,160
1873	1,501
1874	3,245
1882	5,327

Following the introduction of a revision in the postal service regulations in 1883, some of the offices were eliminated, the number being reduced to 4,088 by the end of 1889. But the steady development of postal business necessitated an increasing number of offices as the following figures for Japan proper show:

On March 31 of	No. of P. O.
1907	5,485
1922	6,709
1928	5,477

On March 31 of	No. of P. O.
1924	8,546
1925	8,633
1926	8,705
1927	8,916
1928	9,114
1929	9,393
1930	9,600
1931	9,954
1932	10,208
1933	10,322
1934	10,611

Post offices are classified into three grades, namely 1st, 2nd and 3rd, the 1st being, side by side with 2nd and 3rd offices, in such important places as Tokyo, Osaka, and other leading cities. The 2nd and 3rd are in smaller cities, towns and villages throughout the country. Those of the 1st or 2nd grade are government offices, under direct government management. In post offices of the third class, business is conducted on the contract system.

Its Business

In addition to ordinary matters relating to post and telegrams, the post offices in Japan receive taxes on behalf of the various tax authorities and pay pensions, annuities, etc. on behalf of the Treasury. Since 1906 New Year's greeting cards have been handled separately from ordinary mail matter with a view to relieving congestion. Such mail matter is accepted by all post offices from December 15 until 29 of the same month for delivery on New Year's day.

Ordinary mail matter is delivered 5 or 6 times daily in Tokyo, Osaka, and Kyoto, and 4 or 5 times in other large cities, where there are 1st class offices. In smaller cities, the 2nd class offices deliver 3 or 4 times a day. In towns and villages where they have 3rd class offices, mail matter is delivered twice a day only. The number of collections is the same as that of delivery in most cases.

The parcel post service was started in 1892, the first arrangement as regards foreign connections being made with Hongkong in 1879. The scope of international service was gradually extended, and covers al-

most all treaty countries at present. Statistical Tables In the following are given a number of tables relating to the volume of business, and its growth, handled by the post offices:

NUMBER OF POST OFFICES (September 30, 1934)

	Japan Proper	Taiwan	Karafuto	Chosen	Kwantung Leased Territory	South Sea Islands
1st Class	87	12	—	—	—	—
2nd Class	221	10	4	98	56	9
3rd Class	9,845	158	72	—	—	—
Minor offices	69	—	—	16	150	—
Total	10,822	180	76	114	206	9

QUANTITY OF MAIL MATTER HANDLED IN JAPAN PROPER

	Ordinary mail	Parcel post	Total	Percentage of Increase
1892-1893	{ Despatched 277,805,743 Received 278,598,069	40,755 38,000	277,846,498 278,636,069	10.33 —
1897-1898	{ Despatched 550,915,742 Received 539,540,474	4,108,488 4,060,879	555,023,230 543,601,270	9.98 9.51
1907-1908	{ Despatched 1,357,447,195 Received 1,346,523,695	17,676,745 16,567,155	1,375,123,939 1,363,092,850	6.21 5.65
1912-1913	{ Despatched 1,630,394,398 Received 1,594,850,576	24,276,991 23,008,666	1,654,671,389 1,617,859,242	5.28 6.03
1921-1922	{ Despatched 3,992,769,865 Received 3,989,809,281	48,758,863 45,890,304	4,041,528,718 4,035,709,585	2.03 1.87
1926-1927	{ Despatched 3,974,192,623 Received 3,906,474,525	58,258,644 55,852,079	4,032,451,267 3,962,326,604	2.49 2.66
1929-1930	{ Despatched 5,096,611,368 Received 5,046,099,425	68,650,583 60,654,644	5,165,261,951 5,106,754,069	9.55 (-)-9.70
1930-1931	{ Despatched 4,400,551,651 Received 4,437,939,312	60,067,753 57,724,887	4,460,619,404 4,495,664,199	(-)-0.02 0.18
1931-1932	{ Despatched 4,409,202,575 Received 4,532,477,445	58,201,031 55,654,509	4,548,404,806 4,588,132,042	1.08 (-)-1.35
1932-1933	{ Despatched 4,253,259,031 Received 4,294,100,596	58,472,313 54,849,774	4,312,231,344 4,348,950,370	(-)-0.36 0.34
1933-1934	{ Despatched 4,357,325,600 Received 4,402,200,835	61,240,342 57,762,972	4,418,565,942 4,459,963,807	0.25 0.26

QUANTITY OF MAIL MATTER HANDLED IN 1933-34 IN THE EMPIRE

	Japan proper	Taiwan	Karafuto	Chosen	Kwantung Leased Territory	South Sea Mandated Islands
Ordinary mail						
Domestic mail						
Despatched	4,327,177,681	75,122,427	19,754,022	268,703,793	133,835,809	1,462,025
Collection of money	6,628,468	190,128	12,683	378,152	30,919	—
Received	4,366,856,287	85,031,316	28,409,997	292,540,894	108,276,274	1,980,351
Collection of money	—	285,368	59,704	574,662	102,563	—
Foreign mail						
Despatched	30,147,919	625,487	—	467,504	12,278,152	10,335
Received	35,344,548	650,056	—	1,023,256	9,415,328	14,395

	Japan proper	Taiwan	Karafuto	Chosen	Kwantung Leased Territory	South Sea Mandated Islands
Parcel post						
Domestic						
Despatched	60,602,593	633,860	202,850	2,281,090	767,170	10,685
Received	57,622,925	1,142,885	506,121	3,272,234	2,145,057	43,588
Foreign						
Despatched	637,749	7,620	—	12,419	18,232	73
Received	140,047	2,534	—	6,980	11,703	152
Total						
Despatched	4,418,565,941	76,389,893	19,956,872	271,465,706	146,894,363	1,483,118
Collection of Money	6,628,468	190,128	12,683	378,152	30,917	—
Received	4,459,963,807	86,626,791	28,916,118	296,843,364	119,848,362	2,038,486
Collection of Money	—	285,368	59,704	574,662	102,563	—

Postal Money Order can hardly be included into the business of communications. It is, however, one of the important lines of business handled by the post office for the con-

venience of the large mass of people. The number and amount of postal money orders handled during 1933-34 are given below:

POSTAL MONEY ORDERS IN 1933-34

DOMESTIC

Territory	Issued		Paid	
	No.	Amount (in yen)	No.	Amount (in yen)
Japan Proper	33,332,829	682,431,763	35,208,631	731,180,972
Taiwan	1,051,069	27,736,885	610,567	16,612,763
Karafuto	459,899	14,102,622	221,766	9,119,062
Chosen	3,474,661	108,257,022	3,104,117	99,739,650
Kwantung Leased Territory	1,341,424	41,685,746	497,707	16,865,189
South Sea Mandated Islands	81,186	7,046,278	26,117	6,597,332

FOREIGN

Japan Proper	27,380	1,202,894	136,383	4,780,421
Taiwan	9,869	300,789	1,543	50,005
Karafuto	47	3,215	109	10,767
Chosen	6,212	302,782	27,919	701,327
Kwantung Leased Territory	796	30,018	6,102	225,817
South Sea Mandated Islands	368	4,059	55	4,349

The number of postal money orders issued in Japan proper has been on the constant increase since 1875 when the business was first opened

while the amount reached its highest mark in 1926 and continued decrease for five years until it began to regain the upward tendency in 1933.

POSTAL MONEY ORDERS IN JAPAN PROPER 1875-1933

Fiscal Year	Number	Increase (in percentage)	Amount (in yen)	Increase (in percentage)
1875 { Issued	115,703	—	2,123,146	—
Paid	unknown	—	unknown	—
1897 { Issued	5,522,282	461.28	50,655,614	223.59
Paid	5,708,934	—	53,913,402	—
1902 { Issued	8,872,471	6.07	88,366,758	7.44
Paid	9,141,823	6.01	95,624,097	7.74
1907 { Issued	13,764,799	5.51	161,451,080	8.27
Paid	14,819,319	6.21	183,256,859	9.69
1912 { Issued	16,623,165	2.08	216,825,773	3.43
Paid	17,925,194	2.10	240,099,631	2.75
1916 { Issued	20,014,404	2.04	279,364,560	2.88
Paid	21,538,637	2.02	306,299,553	2.76
1921 { Issued	27,298,164	3.64	696,274,035	14.92
Paid	28,892,790	3.41	754,893,817	14.65
1926 { Issued	30,400,558	1.14	749,757,291	0.77
Paid	31,888,323	1.04	797,891,087	0.57
1930 { Issued	31,233,521	0.27	673,278,926	-1.02
Paid	32,820,607	0.29	715,000,527	-1.04
1932 { Issued	31,877,079	0.21	654,639,462	-0.28
Paid	33,674,636	0.26	700,624,150	-0.20
1933 { Issued	33,860,209	0.47	633,634,657	0.44
Paid	35,345,114	0.50	735,961,393	0.50

Telegraph Service

Telegraph service in Japan was started in August, 1869, but this was for Governmental messages exclusively. Public telegraph service was started in September of the same year between Tokyo and Yokohama. Telegrams in European languages were despatched for the first time in April, 1870. In August of the same year Osaka and Kobé began to exchange telegraph messages. In June, 1871 the laying of the submarine cable between Nagasaki and Shanghai was completed. In February, 1873, aerial lines connected Tokyo and Nagasaki and telegraph service for districts along the lines was opened. In January, 1879, Japan entered the international tele-

graph association. With revisions of rules and laws in subsequent years the business was started on a fair and steady road of progress. Wireless telegraph service was installed in 1908, and telegraphic picture transmission was undertaken from August, 1930.

Statistics on the telegraph services follow:

TELEGRAPH STATIONS IN JAPAN PROPER

Year	Number	Increase in the year
1929-1930	7,011	175
1930-1931	7,631	620
1931-1932	7,709	78
1932-1933	7,813	104
1933-1934	7,942	129

NUMBER OF TELEGRAPH OFFICES, SEPTEMBER 30, 1934

	Japan proper	Taiwan	Karafuto	Chosen	China	Kwantung Leased Territory	South Sea Islands
1st class	4	1	—	—	3	24	—
Wireless	3	3	—	—	—	—	—
2nd class	6	—	—	7	—	—	—
Wireless { Land	18	—	—	—	—	—	—
{ S. S.	20	—	—	—	—	—	—

	Japan proper	Taiwan	Karafuto	Chosen	China	Kwantung Leased Territory	South Sea Islands
Post and telegraph offices	6,158	161	75	218	—	25	9
Minor offices	1,064	22	11	95	—	97	—
Wireless { Land	8	2	—	—	—	43	—
{ S. S.	667	8	—	—	—	—	—
Total	7,948	197	86	320	3	165	9

TELEGRAMS HANDLED IN 1933-1934

		Domestic messages		Foreign messages	
		Despatched	Delivered	Despatched	Delivered
Japan Proper (Manchuria included)		56,529,921	58,843,016	1,237,193	1,242,847
Taiwan		1,505,767	1,582,689	25,705	36,238
Karafuto		886,155	857,116	493	1,234
Chosen		6,410,601	6,325,078	18,967	23,616
P. O. in China		27,023	31,521	148,279	128,871
Kwantung Leased Territory		3,081,004	2,834,127	239,790	312,546
South Sea Islands		171,315	151,091	1,788	462

NUMBER OF TELEGRAMS HANDLED BY INLAND POST AND TELEGRAPH OFFICES

(1929-1934)

		Domestic	Despatch per 10 of population	Foreign	Transit
1929-30		63,905,977	10.4	1,294,828	117,898,056
		66,507,676		1,336,570	
1930-31		57,332,506	9.09	1,183,861	107,287,804
		59,925,616		1,224,974	
1931-32		55,507,280	8.8	1,198,654	102,771,973
		57,784,498		1,224,442	
1932-33		54,065,046	8.3	1,254,430	101,297,228
		56,281,163		1,243,925	
1933-34		56,529,921		1,237,193	—
		58,843,016		1,242,847	—

LENGTH OF INLAND TELEGRAPH LINES

March 31, 1934

	Km.	As compared with the previous year
Land lines		
Aerial lines, routes	35,583	- 120
" lines	234,188	- 891
Overhead cables,		
Routes	86	+ 2
Cores	21,839	+1,537
Underground lines		
Routes	723	+ 16
Cores	97,518	+2,626
Submarine cables		
Lines	15,271	- 15
Cores	18,331	- 26

PNEUMATIC TUBES

1932-1933

	Metre	As compared with the previous year
Length of routes	70,840	+ 349
Length of tubes	142,964	+ 1,609

FREQUENCIES AND HOURS OF FAULTS OF INLAND TELEGRAPH

1932-1933

Land and underground lines	
Contacts	{ Frequency 4,557 Hour 22,104
Earth	{ Frequency 3,305 Hour 17,021

Disconnection	{ Frequency 2,134 Hour 7,737
Leakage	{ Frequency 220 Hour 2,670
Other	{ Frequency 889 Hour 1,602
Total	{ Frequency 11,105 Hour 51,034
As compared with the previous year	{ Frequency + 128 Hour + 5,987
Per 100 km. of line	{ Frequency 3 Hour 15
Submarine Cables	{ Frequency 76 Hour 194,074
As compared with the previous year	{ Frequency - 28 Hour - 32,906

TELEGRAPH APPARATUSES AND BATTERIES

1932-1933

Apparatuses	
Telephones for telegraph service	4,299
Ink writers	7
Sounders	5,782
Automatic telegraphs, duplex	161
Undulator and siphon recorders	15
Printing duplex telegraphs, Japanese	49
Printing automatic duplex telegraph, alphabet	4
Double-duplex printing telegraphs	7
Phototelegraphs	2
Telegraph repeaters	152
Automatic time switch	78
Others	124
Total	10,680
Batteries	
Primary	94,200
Secondary	5,952
Total	100,152

RADIOTELEGRAPH APPARATUSSES

1932-1933

Spark transmitters	32
Dynamo transmitters	2
Vacuum tube transmitters	107
Long and middle wave receivers	214
Broadcasting receivers	211
Short wave receivers	182
Direction finders	7
Amplifiers	80
Record amplifiers	40
Accessories	630
Batteries	3,562

Wireless Telegraph Service

The study of wireless telegraphy was begun in Japan in 1896, or one year after the invention of wireless telegraphy by Marquis Marconi. In 1903, an experiment was made be-

tween Nagasaki and Taiwan by the Communications Department, with satisfactory results.

The First Station In November 1906, Japan sent her delegation to Berlin to represent her at the First World Conference on Wireless Telegraphy. In May, 1908, the first land wireless telegraph station was established in Choshi, (Chiba prefecture), whilst the first marine wireless telegraph equipment was set up on the Toyo Kisen liner "Tenyo Maru" in the same year. In July, 1908 wireless telegraph stations were established at Ohsezaki in Nagasaki prefecture, Shionomisaki in Wakayama prefecture and Tsunojima in Yamaguchi prefecture. In December, 1908, a wireless telegraph station was established at Otchishi in Hokkaido. At the same time sets were installed on some of our ocean liners. Japan was thus placed on a more or less secure foundation in the sphere of wireless telegraphy.

The circulation of regulations for private wireless telegraph offices in October, 1915, greatly facilitated the healthy growth of the business, and the service was extended to wider areas. It was utilized for steamship communication, and contact was also made with steamers and between ships and land stations, and also between aeroplanes and steamers or stations on land. With the enforcement of a law for the establishment of wireless sets on steamers, the number of stations rapidly increased.

International Communication The extension of wireless communication with other countries started in Japan in 1915, when messages were exchanged between Otchishi station and Petropavlovsk of Kamchatka. In 1916, the Funabashi station succeeded in exchanging messages with Hawaii. In 1920, the Iwaki station was established for handling mes-

sages between Japan and America. In 1925, the Government issued a law establishing the Japan Wireless Telegraph Company with a capital of ¥20,000,000, with a view to becoming absolutely independent of foreign telegraph companies, with whose co-operation Japan had been exchanging wireless messages with all other countries, except America, Russia, and China.

The Government transferred to the Company its Iwaki radio plant and the ground at Yosami and Yokkaichi which it was holding with the intention of erecting radio stations for the services with countries in Europe.

The Company has, according to the Law, to equip and manage the facilities and then rent them to the Ministry of Communications in consideration of a subsidy. Although many improvements were introduced at considerable outlay over all former installations of Iwaki radio plant by the Company, the advent of short-wave methods compelled it to close the stations upon the completion of its new stations at Oyama and Fukuoka.

The Company's circuits now offer from Nagoya direct communication service with England, France, Germany, Italy, Switzerland, Poland, Holland, Mexico and Brazil; and from Tokyo the circuits reach out to North and South America, Hawaii, the Philippines, French Indo-China, Siam, Dutch Indies, British India, and Syria. The Company has an

extensive plan of development which will in future place Japan in direct touch with all the important countries of the world.

The Company now places the following stations in daily twentyfour hour service:

(a) Transmitting station at Oyama, near Tokyo.

Receiving station at Fukuoka, near Tokyo.

(b) Transmitting station at Yosami, near Nagoya.

Receiving station at Yokkaichi, near Nagoya.

Stations (a) are used for direct communication with San Francisco, Buenos Aires, Honolulu, Manila, Saigon, Bangkok, Bandoeng (Java), Bombay and Beirut (Syria); and stations (b) for direct communication with London, Paris, Berlin, Rome, Geneva and Warsaw.

Messages originating in or destined to places beyond those mentioned above are retransmitted at those particular points.

Number of telegrams dealt with at wireless telegraph offices in recent five years was as follows:

		Domestic	Foreign
1928-29	{ Despatch	343,540	48,803
	{ Arrival	209,044	23,296
1929-30	{ Despatch	379,297	49,413
	{ Arrival	282,954	23,160
1930-31	{ Despatch	376,953	56,687
	{ Arrival	302,153	25,039
1931-32	{ Despatch	386,959	53,929
	{ Arrival	290,559	24,097
1932-33	{ Despatch	387,366	50,403
	{ Arrival	262,587	22,444

Telephone Service

According to the latest statistics the number of the telephone exchange offices in Japan proper was 4,786 and that of subscribers 806,515.

The following tables show the development and present scope of the telephone service:

POST TELEGRAPH AND TELEPHONE OFFICES WHICH HANDLED TELEPHONE IN 1933-1934

	Exchange offices	Other offices
Japan proper	4,786	6,531
Taiwan	112	165
Karafuto	25	48
Chosen	191	726
Kwantung Leased Territory	32	182
South Sea Islands	2	—

TELEPHONE SERVICE

NUMBER OF INLAND TELEPHONE SUBSCRIBERS			1930-31	715,020	176,900
	Total subscribers	Applicants for subscription	1931-32	729,914	172,150
			1932-33	761,136	167,276
1928-29	655,721	195,332	1933-34	796,538	—
1929-30	690,043	182,217	1934 (September)	806,515	159,302

NUMBER OF TELEPHONE SUBSCRIBERS IN THE EMPIRE 1932-1933

Japan proper	Individual subscription	Party line subscription	Extention line subscription	Total
Tokyo Bureau	221,400	6,145	538	228,083
Nagoya Bureau	107,871	1,194	407	109,472
Osaka Bureau	197,462	3,292	1,074	201,827
Hiroshima Bureau	63,149	996	536	64,681
Kumamoto Bureau	66,854	1,124	353	68,331
Sendai Bureau	56,461	824	273	57,558
Sapporo Bureau	30,761	350	73	31,184
Total	743,958	13,925	3,253	761,186
Taiwan				15,500
Karafuto				5,173
Chosen				34,869
Kwantung Leased Territory				21,255
South Sea Islands				327

NUMBER OF INLAND TELEPHONE MESSAGES BETWEEN SUBSCRIBERS

1928-1929	2,730,238,110	1931-1932	3,111,359,022
1929-1930	2,881,123,698	1932-1933	3,208,443,375
1930-1931	2,992,928,336		

NUMBER OF TELEPHONE MESSAGES IN THE EMPIRE 1932-1933

	In the same subscription district			With other district	
	Messages between subscribers	Hours of conversation of office and by public telephone	Requests of call	Hours of conversation	Requests of call
Japan proper	3,208,443,375	35,444,101	38,537	190,635,368	1,929,063
Taiwan	77,639,368	89,161	546	2,472,413	48,880
Karafuto	24,328,144	26,322	—	543,838	22,977
Chosen	206,445,318	63,568	168	3,128,185	276,955
Kwantung Leased Territory	295,106,438	166,297	4,316	1,540,268	26,688
South Sea Islands	2,255,542	22	—	—	—

FREQUENCIES OF FAULTS OF URBAN TELEPHONES IN JAPAN PROPER 1932-1933

		As compared with the previous year
Faults in exchange offices	492,632	— 55,023
.. subscribers	588,949	+ 7,941
.. on routes	276,379	— 26,395
Total	1,307,960	— 73,478
Faults per 1 subscriber	1.7	— .7

LENGTH OF TELEPHONE LINES IN THE EMPIRE 1933-34

	Japan proper		Taiwan	Kara- futo	Chosen	Kwan- tung Leased Territory	South Sea Islands
	Km.	As compared with the previous year					
Land lines							
Aerial lines, routes	57,515	+ 3,000	3,930	236	9,307	2,412	20
" lines	588,378	- 4,516	26,045	4,680	57,310	31,966	85
Overhead cables, routes	5,165	+ 1,158	157	31	17	314	3
" cores	1,658,552	+148,371	18,060	5,198	39,072	59,851	375
Underground lines							
Routes	3,370	+ 255	22	4	43	22	—
Cores	3,791,777	+239,470	35,417	3,353	55,662	44,941	—
Submarine cables							
Lines	968	+ 851	—	—	—	—	—
Cores	7,279	+ 3,380	—	—	—	—	—

Figures of Taiwan, Karafuto, Chosen, Kwantung Leased Territory and South Sea Islands are of 1932-33.

NUMBER OF TELEPHONE APPARATUSES AND BATTERIES IN THE EMPIRE 1932-1933

	Japan proper		Taiwan	Kara- futo	Chosen	Kwan- tung Leased Territory	South Sea Islands
		As compared with the previous year					
Manual telephone exchanges	11,949	+ 761	254	1	—	198	1
Automatic telephone exchanges	2,274	+ 94	1	85	841	197	2
Telephones	860,934	+42,854	17,620	5,658	43,648	24,695	254
Batteries	876,826	- 2,709	24,516	5,999	71,446	17,171	470

Wireless Telephone Service

The first experiment with wireless telephony in Japan was made in 1911 by the Communications Department, with very satisfactory results. It was in 1923, however, that the service was opened for public use between Kobé city and steamers in the harbour. In 1926, this service was extended to Moji. The result being satisfactory, the Government decided further to extend the service and in December, 1932, the International Telephone Company, with a capital of ¥10,000,000, was established through the solicitation of the Communications Ministry to build up stations for the use of the Government and private bodies. This was done to facilitate wireless telephone service between Japan and the world

at large, Japan's colonies and ships on the waters. The transmitting station of the company is established at Nazaki, Ibaraki prefecture, and the receiving station at Komuro, Saitama prefecture, and these stations are connected each other and with the Tokyo Central Telephone Office by cables. Wireless telephones are now available between Tokyo, Nagoya, Kanazawa, Kobé, Osaka, Kyoto, Yokohama, Toyohashi, Nara, Himéji, Shimonoséki, Fukui, Fukuoka, Yawata, Wakamatsu, Nishinomiya, Amagasaki and Suma. The service has been opened between Formosa and Tokyo, on June 20, 1934.

In 1934-35 international wireless telephone service has been successively opened between Japan and Manchoukuo, U. S. A., a part of Canada, Cuba, Philippines, Java,

Smatra, England, and Germany. The service with other European countries will be opened soon.

Telephotograph Service This service is only available between Tokyo, Osaka and Formosa.

Radio

Radio broadcasting in Japan is under the control of a single organization, the Broadcasting Corporation of Japan, which in turn is supervised by the Ministry of Communications. Programmes are subjected to strict censorship and nothing that might harm the interests of the country and its people is allowed to go on the air. Advertising of all sorts is prohibited. Political speeches cannot be included in the daily programmes. Even election campaign speeches and Diet proceedings cannot be broadcasted. (See Chapter XXXVII.)

The First Programme The first radio programme in Japan went on the air on March 22, 1925, five years after the world's first regular commercial broadcasting by the station KDKA, East Pittsburgh, Pennsylvania. The station, using the call letters JOAK, was in Tokyo, and it had a power of only 500 watts. This station, established temporarily at Shibaura, on the water front of Tokyo Harbour, was replaced in July by a 1 kw. station at Atagoyama, a hill in the southern part of Tokyo. In the difficult times following the great earthquake and fire of September, 1923, which laid waste a greater part of Tokyo, the radio played an important part in comforting and encouraging the citizens who were working hard to rebuild their city and their homes.

Shortly afterwards, small stations were established in Osaka and Nagoya, which form with Tokyo the three largest population centres. The engineers in charge of these stations were sceptical about their

success. There was no assurance that the Japanese public would respond by buying radio sets and listening in, or would like the programmes once they were heard. These fears, however, were groundless. For a time there were not enough receiving sets in the stores to meet the demand. Instead of a novelty, the radio became a daily necessity. Elated at their success, the promoters worked out a plan to centralize all the broadcasting in the country, which was heartily approved by the Ministry of Communications. Before the end of a year, the stations in Tokyo, Osaka and Nagoya were merged, and the Broadcasting Corporation of Japan was formed to assure nationwide cooperation in meeting the demand for more efficient stations and better programmes.

The Subscribers The association started with 338,000 subscribers; on March 30, 1935, it has 1,979,096 or 30.6 in 1,000 of population. The present fee is ¥0.50 for each receiving set.

The Stations The development so far made has been in two directions, an increase in the number of stations and improvement in programmes. In the beginning there were three stations. Now there are 25, and several more are to be added. As the association was meant to be nationwide, every section of Japan had to be considered. The directors called in the engineers and explained the problem. Broadcasting had to be available in any home anywhere in the country. The engineers pointed out that the geographical formation

of Japan, which stretches more than 3,380 kilometres from Hokkaido to Taiwan, broken by rugged mountains, made it advisable to broadcast from a number of stations suitably located. The country was divided into seven districts, in each of which a 10-kw. station has been built. These—in Tokyo, Osaka, Nagoya, Hiroshima, Kumamoto, Sendai and Sapporo—are the key stations. The remaining 18 are relay stations, ranging in power from 300 watts to 3 kilowatts. Their purpose is to bring the programmes of the seven key stations closer to the listeners, saving them the expense of powerful receiving sets. For double broadcasting, the power of the Tokyo, Osaka and Nagoya stations was increased to 20 kilowatts.

International Broadcasting In 1930 Japan was able to undertake international broadcasting for the first time. The message of King George at the opening of the Naval Conference in London was clearly heard.

News was broadcasted from the League of Nations at Geneva on February 21, 1933, the opening speeches at the World Economic Conference was sent from London on June 12, and the reports by the Japanese delegates on July 24. The first international broadcasting between Germany and Japan was undertaken on November 15, and again on December 19. For the celebration of the birth of the Crown Prince of Japan international broadcasting was exchanged between Tokyo, Osaka, Geneva, New York and Berlin in December and on January 4, 1934. In 1934, 31 international broadcasts were exchanged between Japan and different countries of the world.

Overseas Broadcast The Overseas Short-wave Broadcast has been fixed as follows: for Europe and the Pacific Ocean 2:00-3:00 P. M.; for American continents and the Atlantic

Ocean 6:00-7:00 A. M. on Tuesdays and Fridays.

These broadcasts will be sent out from the Nasaki Transmitting Station of the Japan International Telephone Company.

Location:—Nasaki, Ibaraki Prefecture, Japan. Position, Latitude 36° 10' 44" North: Longitude 139° 51' East.

Transmitter—20 kw.

Wave length and Frequency:—JVH 20.55 metres 14,600 kilocycles.

Any change in wave length and frequency will be announced during the course of the regular daily broadcast.

Daily broadcast programme will be as follows:

Opening announcement and résumé of the day's programme	10 minutes
News in English	10 minutes
Music entertainment, lectures, broadcasts from the scene of actual happenings or from the leading theatres and centres of amusement	30 minutes
News in Japanese	10 minutes
Resumé of the following day's programme and concluding announcement	4 minutes
National Anthem	3 minutes

These make up the full one hour programme on the Overseas Broadcast.

In the near future the Tokyo station is to be increased to a power of 150 kilowatts and other stations to 100 kilowatts.

The extension programme also includes the construction of a large building for each of the studios in Tokyo and Osaka, which will incorporate the latest type of broadcasting equipment. These two cities will thus continue to be the broadcasting centres of the Empire.

The B. C. J. The Broadcasting Corporation of Japan was organized on August 20, 1925. The organization, being a public service corporation with no desire for profit, obtained a special charter with right to control and operate the whole broadcasting

service in Japan and to undertake any scheme for the promotion of radio science, although all work is subject to the supervision of the Ministry of Communications. The corporation is headed by Mr. Kenzo Iwahara, former chairman of the Board of Directors of the Tokyo Broadcasting Station.

Business conditions of the corporation in 1931-1933 were as follows:

SUBSCRIBERS			
(Japan Proper)			
At the end of	Number of subscribers	Increase over the previous year	Percentage of the increase
1931	948,822	214,087	29
1932	1,320,143	371,321	39
1933	1,627,836	307,693	23
1934	1,897,398	269,562	16

BALANCE SHEET

March 31, 1934

Assets	
Land	¥2,205,409.42
Building	1,696,904.95
Equipments	2,570,270.86
Loan	750,000.00
Securities	375,000.00

Sundry debtors	¥4,634.44
Suspense accounts	277,498.02
Cash on hand	3,117,311.18
Total	11,027,028.87

Liabilities

Capital account	¥ 1,390,200.00
Sundry creditors	69,386.33
Physical plant funds	6,597,846.08
Balance available for the year	2,969,596.46
Total	11,027,028.87

1933-34 ACCOUNT

Income

Subscription fees	¥13,373,286.60
Revenue from publications and sundry receipts	102,896.76
Total	13,481,183.36

Expenditure

Expenditure on programmes	¥2,304,006.70
Expenditure on engineering	1,270,080.7
Expenditure on publicity	300,816.70
.. .. service	425,540.53
.. .. collection of fees	2,175,402.15
Administration expenses	1,268,437.35
Expenditure on research	42,243.63
Licence and contribution paid to the Government	1,336,941.19
Provision to staff's retiring allowance	214,000.00
Depreciation of physical plant	957,630.42
Sundry expenditure	226,487.96
Balance available for the year	2,969,596.46
Total	13,481,183.36

CHAPTER XXV

LAND AND AIR TRANSPORTATION

State Railways

Historical Background

Japan's railway projects date from 1869, when the Government formed a plan to lay a trunk line linking Tokyo with Kyoto and Kobé, together with some branches to Yokohama and Tsuruga, a port on the Japan Sea. As the first step, half a million yen was sanctioned for the work between Tokyo (Shimbashi) and Yokohama, but the State Treasury was in no position to find this amount, while private capital declined to venture into this novel field of investment. It was at this time that an Englishman, Horatio Nelson Lay, by name, came forward with a proposal to furnish the required funds. The terms offered by him were accepted and a Japanese loan for one million sterling was placed on the London market. With the arrival of a British engineering corps and materials, the first sod was dug on the 28.962 kilometre Shimbashi-Yokohama section in March, 1870, and on the 32.18 kilometre Kobé-Osaka section in November, 1870. The gauge adopted for these lines was one of 1.067 metres, which has later become the standard gauge of the Japanese railways.

Tokyo-Yokohama and Other Lines The work between Shimbashi and Yokohama was completed in September, 1872, while the Kobé-Osaka line was opened to traffic in 1874 and its further extension to Kyoto in 1877. These sections have practically formed the nucleus of what now con-

stitutes the Tokaido Line, one of the main arteries of railway traffic in Japan. In 1880, the Kyoto-Otsu section was completed and in 1884 a further extension with a length of 41.834 kilometres between Tsuruga and Nagahama, a town along Lake Biwa, was completed and opened to traffic in pursuance of the railway idea of linking up the Pacific and the Japan Sea. Meanwhile, a survey was made on the Otaru-Horonai section in Hokkaido, where colonization work was being strenuously encouraged. Construction of this section was soon undertaken and the 88.495 kilometre length was opened to business in 1882, thus bringing the total length of railway under Government ownership toward the close of 1884 to 185.035 kilometres.

Private Lines About this time the Government was in financial difficulties and the building of State railways practically came to a standstill except for a few extensions. It was at this time that, not being in a position to undertake the work itself, the Government began to encourage private enterprise, the encouragement mostly being in the shape of subsidies. Under these circumstances, many private railways were built in rapid succession, the most notable among them being the Nippon Railway, the Sanyo Railway, the Kyushu Railway and the Hokkaido Colliery Railway. The total length of line thus built by private capital in the ten years between 1881 and 1891 aggregated 1,874.485 kilometres, a length more

than double that of the State which did not exceed 886.559 kilometres by the end of 1891.

The Trunk Line Prior to this, the Government decided to lay a trunk line through the Nakasendo, the old mountainous highway of Central Japan, but in view of engineering difficulties along this line it was subsequently abandoned in favour of the level region of the Tokaido. Work on the new route was finished in July, 1889, whereby a through service was opened for a distance of 611.42 kilometres between Tokyo and Kobé. Then a branch to Yokosuka was opened and a 160.9 kilometres section between Takasaki and Naoetsu was completed with the exception of 9.654 kilometres over the Usui Pass. This difficult section, for which the Abt rack rail system was adopted, was not opened for service until 1893.

The Railway Construction Law In view of the industrial progress being made in the country there was an urgent demand for the speedy construction of more railways. The entire length of Japanese railways at that time amounted to only 2,574.4 kilometres and as many as 5,792.4 kilometres were needed to complete the railway network over the whole country. The bulk of these contemplated lines was in remote districts with no prospect of immediate profit, and on that account did not appeal to private enterprise. These circumstances showed both the Government and the public the advisability of State acquisition of private lines and opinion was further strengthened by the financial failure of some of the private concerns. In view of this, in 1892, the Railway Construction Law was passed and the Government set to work constructing important lines. The law embodied a comprehensive programme of railway building and

contained the guiding principles on which the railway system of Japan was founded. At the same time the matter of consolidating the different lines into one complete system was being studied by a committee of enquiry appointed by the Government. The acquisition of private railways was accomplished in October, 1907, the subsidiary businesses being taken over at the same time. Immediately after nationalization the State Railways were organized under a Railway Bureau, which was directly responsible to the Cabinet. But in May, 1920, a separate Department of State was created to deal with railway affairs and the Minister of Railways was appointed to control it.

Railway Network

The law of 1892 authorized the Government to build certain specified lines within a certain limit of time, and also to buy up such private railways as were judged necessary for the completion of a unified system. Pursuant to this programme the State Railways proceeded with the work of construction and in 1906 and 1907 purchased 17 companies' lines to a total length of 4,547.034 kilometres, thereby bringing under national control all the railway lines in Japan proper, with the exception of feeding lines of local importance. In 1922 after a careful survey of the State lines the Railway Construction Law was modified and some new lines were added to the original programme. At the same time it was decided that, pursuant to the new law, such local lines as formed a connecting link between the State lines projected or those lines considered necessary for completing a unified national railway system be purchased.

The total length of State lines not yet opened to business on March 31,

1933, was 3,690 kilometres representing 1,098 kilometres of lines under construction and 2,592 kilometres of lines sanctioned, but not started on within the year. As compared with the preceding year the lines under construction increased by 375 kilometres and those to be started on increased by 102 kilometres.

Organization and Staff

Prior to the nationalization of the private lines, the State lines were operated on a departmental system based on the principle of centralization. The system worked well because the management of the State lines was a relatively small business, but when the Government assumed the management of all lines it was found unequal to the extra work, and in December, 1908, the Imperial Government Railways were removed from the control of the Minister of Communications and assigned to a newly created administrative body, the Railway Board. The administration was then decentralized and remains so to-day. The existing system of organization of the State Railways was established in May, 1920, when the said Railway Board was made, by virtue of Imperial Ordinance No. 143, an independent department of the Central Government. According to the regulations, the Department of Railways not only controls the whole of the State lines, but supervises the provincial railways and tramways in Japan proper. It maintains one central and six regional offices. The Central Office is directly governed by the Minister of Railways and manages all matters relating to the State Railways as well as maintaining supervision over provincial railways and tramways. It is composed of eight departments according to the kinds of business dealt with. These are the Minister's Secretariat; Bu-

reau of Local Railway Administration; Bureau of Traffic and Operation; Bureau of Construction; Bureau of Maintenance and Improvement; Bureau of Mechanical Engineering; Bureau of Electricity; and Bureau of Finance and Purchase. The Central Office also controls Regions, District Construction, District Improvement, District Electric Offices and Tokyo Railway Hospital. On April 23, 1930, by virtue of Imperial Ordinance No. 83, a further bureau, the Board of Tourist Industry was created as a separate bureau of the Department of Railways. The bureau is controlled by the Minister of Railways and attends to the business of the tourist industry, its object being to encourage people of other lands, by advertising and in other ways, to visit Japan and see her incomparable scenic beauty, natural charm and national manners and customs, and to encourage Japanese living at home to take trips to different parts of the Empire.

As stated above, the administration of the State Railways is decentralized into six regions, Tokyo, Nagoya, Osaka, Moji, Sendai and Sapporo. Each region is a complete unit and is in charge of a director who is vested with power to conduct, at his own discretion, all affairs relative to his jurisdiction, excepting matters of general and large import for which decision of the central administration has to be obtained.

On the State Railways of Japan the members of the staff are either Government officials or employees. On March 31, 1933, there were altogether 198,848 servants in the employment of the State Railways as against 198,678 in the preceding year. The total salary for the year under review was ¥136,735,245. This shows an increase of ¥2,446,023 (1.8%) from the year before. The average annual salary was ¥688.

Finance By Railway Special Account Law, enforced since 1909, the budget of the State Railways was made separate of the general finances of the State. Furthermore, the law provides that all capital expenditure for railway construction and improvement should be met from the revenue accruing from all sources of traffic and that the ex-

penditure should, in case the revenue is not sufficient to cover it, be supplemented by the proceeds of public loans issued as a charge on this special account.

Traffic

Goods and passengers carried by the State Railways in Japan proper since 1914-15 follow:

Fiscal years	Goods metric tons	Passengers (unit in 1,000)	Goods revenues (¥ 1,000)	Passenger revenues (¥ 1,000)	Daily average revenue per km. (In yen)
1914-15	35,837,241	166,032	51,750	54,671	33
1919-20	60,899,557	357,881	131,809	161,546	81
1921-22	58,312,333	454,535	167,241	214,519	99
1922-23	65,095,702	512,754	179,220	232,301	103
1923-24	65,818,955	579,288	178,109	249,563	102
1924-25	71,178,263	640,828	194,563	259,047	105
1925-26	73,000,274	683,568	198,786	262,074	103
1926-27	74,780,409	740,333	201,609	266,199	101
1927-28	78,621,788	795,722	211,749	271,523	101
1928-29	79,762,959	847,300	220,686	285,337	103
1929-30	77,224,824	862,939	217,949	279,030	99
1930-31	64,087,099	824,152	184,146	255,086	84
1931-32	60,590,746	787,222	176,124	239,972	77
1932-33	61,732,756	781,149	174,706	233,387	75
1933-34	69,402,000	830,936	191,044	252,144	—

Note: 1933-34 figures are liable to future revision.

Activities of the heavy industries and the expansion of trade were reflected on the railway traffic business, as both the passenger fares and freight receipts went up sharply from the year before. The passenger fares for the year 1933-34 amounted to ¥252,144,000, showing a gain of ¥18,757,000, and freight receipts totalled ¥191,044,000, representing a gain of ¥16,338,000 over the preceding fiscal year.

Motor Car Service The Department of Railways inaugurated a motor car passenger service between Okazaki and Tajimi and between Seto-Kinobashi and Kozoji for a distance of 65 kilometres in the business sphere of the Nagoya Regioned Office during the 1930-31 fiscal year. This

was the first venture of the kind, and as the results proved satisfactory the Department opened similar services between Mitajiri and Yamaguchi over a distance of 17 kilometres in the business sphere of the Moji Regional Office and between Kameyama and Mikumo and between Omi and Kurokawa over a total distance of 42 kilometres in the business sphere of the Osaka Regional Office during the 1932-33 fiscal year. Motor car passengers carried during the 1933-34 fiscal year numbered 2,682,764 and motor car goods carried totalled 25,770 metric tons. The passenger fares amounted to ¥496,141 and freight receipts ¥41,269, with a total of ¥537,410. Details are:

MOTOR CAR FREIGHT SERVICE

Regional offices	Goods carried (metric tons)	Average daily goods	Freight receipts	Daily average ton receipts
Tokyo	2,127	6	¥3,392	¥9
Nagoya	11,611	32	19,573	54
Osaka	5,257	14	7,595	21
Moji	6,775	19	10,709	29
Total	25,770	71	41,269	113
Compared with the year before	(in.) 16,218	(in.) 45	(in.) 24,196	(in.) 66

MOTOR CAR PASSENGER SERVICE

Regional offices	Passengers carried	Daily passengers	Passenger fares	Daily fares
Tokyo	473,969	1,298	¥73,982	¥202
Nagoya	1,422,262	3,897	236,457	648
Osaka	417,670	1,144	75,531	207
Moji	368,863	1,011	110,171	302
Total	2,682,764	7,350	496,141	1,359
Compared with the year before	(in.) 1,472,333	(in.) 4,034	(in.) 259,925	(in.) 712

Ferry Service Ferry boats working under the Department of Railways carried for the year under review 6,757,058 passengers for which the total fares of ¥4,922,154 were received. Goods transported amounted to 2,509,512 metric tons, and the

total freight receipts were ¥5,263,032. As compared with the year before, passengers decreased 122,911 and the fares gained by ¥739,262; goods gained by 221,114 tons and the receipts gained by ¥539,162. Details follow:

Regional offices	Passengers		Goods	
	Number	Fares	Tons	Freights
Osaka	731,701	¥289,734	115,231	¥192,637
Moji	5,231,782	3,188,016	1,534,734	1,912,914
Sapporo	793,574	1,514,404	859,547	3,157,481
Total	6,757,058	4,992,154	2,509,512	5,263,032
Compared with the year before	(de.) 122,911	(in.) 739,262	(in.) 221,114	(in.) 539,162

Accidents The number of accidents reported on the State Railways for the year was 5,009, and the casualties numbered 2,918. This shows a gain of 174 casualties over the year before. The railway suicides numbered 2,260, a drop of 327 from the year before. The Department of Railways' shipping accidents totalled 383, a drop of 55 from the year before.

Construction

Railway construction expenses for the 1932-33 fiscal year totalled ¥47,743,368 in contrast with ¥37,706,907 for the 1931-32 year and

¥41,715,774 for the 1930-1931 year. The same for 1933-34 amounted to ¥53,130,133. In 1933-34 the total length of new lines under construction was 1,188.4 kilometres.

Total Length

The total business length of the State Railways for the 1933-34 fiscal year was 15,737 kilometres and the total length of line 25,612 kilometres, showing an increase of 470 kilometres, showing an increase of 470 kilometres in the former and 619 kilometres in the latter. Details are:

Regional offices	Business mileage	Total length of rails
Tokyo	1,983 (in kms.)	4,514
Nagoya	1,901	3,255
Osaka	2,957	4,906
Moji	2,757	4,450
Sendai	3,092	4,252
Sapporo	3,044	4,232
Total	15,784	25,612
Compared with the year before	(in.) 476	(in.) 619

Workshops

The number of factory operatives of the Department of Railways at the end of 1932-33 fiscal year was 14,188, to whom the monthly salary of ¥904,027 was paid. The factory production for the year totalled ¥35,965,491, showing a drop of ¥954,821 from the year before. Of this production ¥21,501,139 was for the repairing of rolling stock; ¥2,925,481 for the improvement of rolling stock, ¥1,245,872 for the manufacturing of rolling stock, and ¥10,283,999 for the manufacturing and repairing of railway stores.

Rolling Stock

The total value of rolling stock was ¥642,463,151, representing an increase of ¥8,901,079 from the year before. The amount of rolling stock owned by the State Railways on March 31, 1933, was 3,953 steam locomotives weighing 329,767 tons; 131 electric locomotives weighing 9,272 tons; and 10 special loco-

tives weighing 210 tons, with the total of 4,094 weighing 339,250 tons, showing an increase of 78 cars and 4,482 tons from the year before.

On the same date, the number of passenger cars was 10,418 with accommodating capacity for 651,389 people showing a drop of 342 cars and capacity of 2,817 from the year before. The number of freight cars was 64,923 with carrying capacity of 864,737 tons, indicating a drop of 215 cars and 4,208 tons from the year before.

On March 31, 1934 there were 3,913 steam locomotives, 141 electric locomotives, and 10, special locomotives with the total of 4,064 weighing 335,233 tons, a decrease of 30 in number and 4,018 in tonnage as compared with the previous year. The number of passenger cars was 10,629 with accommodating capacity for 672,782 people, an increase of 211 cars and 26,393 seats as compared with the preceding year. The number of freight cars was 65,804 with carrying capacity of 873,998 tons, an increase of 881 cars and 9,261 tons as compared with 1933.

Electric Power

The State Railways had four stations, 31 sub-stations and 13 transforming stations on March 31, 1933. The status of these electric stations on March 31, 1933 and 1934 follows:

	No.	Dynamos	Prime motors and converters	Transformers	
		Volume h.p.	No.	Volume kw.	No. Volume k.v.a.
1933	12	122,244	138	305,653	402 567,944
1934	10	121,944	136	308,653	443 668,694

Electric power supplied by the State Railways' electric power stations for 1932-33 amounted to 139,197,271 kw. h. for which ¥1,300,223 were required. The net expenses per kw. h. was a little more than 9 rin (¥0.009). As compared with the year before, the sup-

ply dropped 107,938,492 kw. h. and expenses also ¥639,822, but the kw. h. expense increased 1.32 sen. Power supplied to the sub-stations for the year totalled 287,959,540 kw. h. with expenses of ¥4,564,114. The kw. h. expense was 1.6 sen. As compared with the year before, the power sup-

ply gained 23,694,608 kw. h., and expenses increased ¥194,507. The kw. h. expense declined 0.7 rin.

Finance

The State Railway revenue for the 1933-34 fiscal year totalled ¥870,165,166 against ¥761,894,098 for the 1932-33 fiscal year, while expenditures totalled ¥770,366,710. Revenue and expenditures since the 1926-27 fiscal year follow:

Fiscal years	Revenue (in yen)	Expenditures (in yen)
1926-27	947,386,213	825,612,827
1927-28	1,006,458,791	859,806,853
1928-29	1,014,752,892	876,675,990
1929-30	1,004,911,356	892,160,458
1930-31	818,010,038	740,039,239
1931-32	767,657,721	678,774,390
1932-33	761,894,098	691,012,532
1933-34	870,165,166	770,366,710

Fixed assets of the State Railways for the last eight years follow:

	No.	Length (kilometres)	Construction cost (in yen)
Railways in operation	265	7,183	1,002,724,369 (estimate)
Compared with the year before	(de.) 3	(de.) 59	969,582,057 (1933 actual)
Railways not opened yet	179	3,493	774,682,516 (estimate)
Compared with the year before	(de.) 4	(de.) 252	(de.) 26,274,415

Traffic Looking over the private railway passenger traffic for 1932-33, passengers carried numbered 427,668,098 (an increase of 6,942,997 over the preceding fiscal year), for which the total fares of ¥55,430,020 (a decrease of ¥1,567,766 from the year before) was realized. The average fare per passenger was, for the year ¥0.129. Goods transported by the private railways totalled 22,212,514 tons (a drop of 552,540 tons from the preceding year), for which freight of ¥17,845,070 (a drop of ¥93,910) was realized. The freight receipts per ton were ¥0.803. Railway accidents for the year num-

Fiscal years	Value at the beginning of the year (In ¥1,000)	Value at the end of the year (In ¥1,000)
1926-27	2,453,092	2,647,453
1927-28	2,647,453	2,858,794
1928-29	2,858,794	3,062,614
1929-30	3,062,614	3,246,724
1930-31	3,246,724	3,374,392
1931-32	3,347,392	3,413,786
1932-33	3,413,786	3,503,893
1933-34	3,503,893	3,613,169

BUSINESS INCOME AND EXPENSES (In ¥1,000)

Fiscal years	Income	Expenses	Net profit
1926-27	484,082	353,175	130,907
1927-28	506,444	368,277	138,167
1928-29	529,256	393,380	135,875
1929-30	518,016	399,026	118,989
1930-31	458,140	382,552	75,587
1931-32	433,540	365,088	68,451
1932-33	425,954	364,874	61,079
1933-34	474,254	385,578	88,675

Private Railways

General The status of provincial railways in operation and those not yet opened on March 31, 1934, follows:

bered 1,844 and the number of casualties 937.

Rolling Stock The number of rolling stock on March 31, 1933, was 994, of which steam locomotives numbered 809, electric locomotives 179 and gasolene locomotives 6, with the total weight of 26,117 tons, showing a decrease of 3 cars and 42 tons. The number of passenger cars was 4,478 with a seating capacity of 307,070, while that of freight cars was 11,558 with total loading capacity of 113,185 tons.

Finance Business income and expenses for the private railways for 1932-33 follow:

	Total (in yen)	Compared with 1932-33 fiscal year (in yen)
Business income:		
Passengers	57,055,467	(de.) 1,739,048
Goods	17,896,879	(de.) 78,253
Miscellaneous traffic income	1,904,665	(in.) 79,779
Other income	4,879,192	(in.) 527,402
Total	81,736,203	(de.) 1,210,120
Business expenses:		
Maintenance	7,912,647	(de.) 30,884
Train	17,706,309	(de.) 564,535
Traffic	13,622,101	(de.) 38,131
General expenses	5,214,914	(in.) 332,618
Tax	2,947,696	(de.) 129,335
Total	47,408,667	(de.) 354,005
Business profit	34,327,536	(de.) 856,115
Other ..	24,009,786	(de.) 1,667,885
Interest payment, etc.	38,499,025	(in.) 5,544,387
Government subsidies	7,168,846	(in.) 7,168,846
Balance brought forward from the preceding year	4,766,394	(de.) 3,623,239

Profit disposed of as follows:

	(in yen)	(in yen)
Legal reserve	1,606,634	(de.) 251,960
Voluntary reserve	2,597,572	(de.) 563,161
Bonuses	901,351	(de.) 129,292
Dividends	26,342,075	(de.) 4,171,730
Others	2,148,453	(in.) 139,017
Brought forward	8,102,192	(de.) 6,536,875

Business income per kilometre per day was ¥31,170 (a drop of ¥1,138 from the year before) and the business expenses per kilometre per day was ¥18,077 (a drop of ¥0.525 from the year before), the net profit being ¥13,093 (a drop of ¥0.613).

Assets and Liabilities The assets and liabilities of the private railways at the end of 1932-1933 fiscal years follow:

Items	ASSETS	
	1932-33 fiscal year (in yen)	Compared with the year before (in yen)
Unpaid capital	366,989,723	(in.) 5,027,752
Construction expenses for lines in operation	969,582,057	(in.) 24,063,759
Estimated construction expenses for lines yet unopened	21,483,830	(in.) 3,461,257
Other development expenses	445,535,646	(in.) 20,755,389
Deposits	21,391,137	(de.) 78,470
Securities	87,027,577	(in.) 3,911,695
Others and total	2,104,840,840	(in.) 67,442,256

LIABILITIES

Capital	1,213,613,426	(in.) 54,788,853
Legal reserve	28,554,989	(in.) 1,986,014
Debentures	320,224,871	(de.) 2,371,839
Loans through mortgage syndicates	126,184,302	(in.) 28,715,782
Other loans	187,200,102	(de.) 2,814,963
Bills payable	124,216,893	(de.) 16,449,532
Suspense account	15,295,621	(de.) 3,376,011
Profit for the term	19,683,559	(de.) 1,140,389
Others and total	2,104,840,840	(in.) 67,442,256

Employees The private railway employees numbered 41,572, in 1932-33, to whom monthly salaries of ¥1,721,251 were paid, showing a drop of 760 employees and ¥45,466 a month from the year before. The average salary for one man was ¥52 a month and remained the same as the year before.

Tramcar Service

Lines in Operation Details of the tramcar lines in operation on March 31, 1934, were:

Kinds	No. of lines	Length in kilometres	Capitalization
Electric	94	2,092.75	¥2,058,822,376
Steam	8	127.67	1,861,000
Steam & gasolene	9	101.23	3,795,000
Gasolene	14	136.71	23,257,000

Kinds	No. of lines	Length in kilometres	Capitalization
Horse-power	14	137.45	7,425,000
Man-power	7	56.62	210,663
Total	141	2,652.43	2,095,371,039

Compared with the year before (de.) 3 (de.) 9.33 (de.) 61,832,400

Passenger Traffic Length of opera-

tion of passenger cars for 1932-33 totalled 346,814,853 kilometres, a drop of 2,498,918 kilometres from the year before, and that of operation of freight cars totalled 7,184,951 kilometres, a drop of 233,925 kilometres from the year before. The passenger traffic for 1933 follows:

Kinds	Passengers carried	Passenger fares	Average fare of one passenger
Electric	1,462,680,063	¥98,684,998	¥0.067
Steam	1,295,780	172,347	0.133
Gasolene	2,494,325	253,948	0.104
Horse-power	2,021,507	23,754	0.117
Man-power	1,556	219	0.132
Total	1,466,674,331	99,141,266	0.068
Compared with the year before	(de.) 99,801,558	(de.) 6,616,015	—

Freight Traffic The freight traffic for the year follows:

Kinds	Goods carried (in metric ton)	Freight receipts	Average receipt per metric ton
Electric	902,507	¥ 674,632	¥ 0.748
Steam	99,804	131,816	1.321
Gasolene	183,833	314,205	1.709
Horse-power	76,956	63,136	0.820
Man-power	98,821	68,180	0.727
Total	1,356,921	1,251,969	0.923
Compared with the year before	(de.) 126,944	(de.) 116,127	(in.) 0.001

Business Profit The business profit for 1932-33 totalled ¥41,541,733, the total business revenue being ¥109,669,986 and business expenditure ¥68,128,253. As compared with the year before, the business profit went off ¥3,105,303, or 7.5 per cent., the business revenue ¥6,210,792, or 5.7 per cent., and the business expenditure ¥3,104,989, or 4.6 per cent. Details follow:

Kinds	Business revenue (in yen)	Business expenditure (in yen)
Electric	108,548,051	67,066,647
Steam	335,570	282,558
Gasolene	608,436	611,092
Horse-power	107,792	102,676
Man-power	72,137	65,280
Total	109,669,986	68,128,253

Compared with the year before (de.) 6,210,792 (de.) 3,104,989

Business profit was ¥41,541,733 (a

drop of ¥3,105,803 from the year before), other profit ¥85,930,622 (a drop of ¥51,133,680), interest payment ¥24,858,608 (a gain of ¥3,557,784), other losses ¥9,111,339 (a drop of ¥3,533,063), net profit ¥93,507,410 (a drop of ¥25,330,330) and balance brought forward from the year before ¥38,245,503 (a gain of ¥962,262). The disposal of profit follows:

Legal reserve	¥ 4,125,540 (a drop of ¥1,326,780)
Voluntary ..	4,655,743 (a drop of ¥ 679,384)
Bonuses	1,532,262 (a drop of ¥ 476,968)
Others	36,172,273 (a drop of ¥1,608,372)
Balance carried forward	22,184,956 (a drop of ¥2,214,577)

Assets and Liabilities Assets and liabilities at the end of the fiscal year follow:

1934 Railway Business

State Railways The Imperial Government Railways carried 52,373,000 more passengers, loaded 6,918,680 tons more goods and earned ¥41,294,000 more in 1934 (calendar year) than they had in the previous year. Both the State and private lines had the best results in five years. The Government lines' profits tell just below those for the two-depression years of 1928 and 1929, when takings were respectively ¥506,023,000 and ¥496,979,000. State railway goods, as usual, were dominated by coal, with lumber, rice, gravel, fertilizers, charcoal, cement, iron, steel and petroleum following in that order.

December was the busiest month for hauling goods and April saw most passengers and reported the biggest monthly profit. Principal goods transported by the State Railways during 1933 and 1934 follows:

Goods	1934	1933
	(In metric tons)	
Coal	26,901,340	24,962,410
Lumber	6,903,860	5,886,040
Rice	3,343,210	2,923,860
Gravel	2,961,090	2,770,080
Minerals	2,547,090	2,081,980
Fertilizers	1,153,950	1,034,420
Cement	1,237,490	1,199,140
Iron and steel	909,580	704,220
Petroleum	693,780	559,250
Cotton yarn and cloth	589,410	527,910
Flour	331,640	323,410
Sugar	285,580	284,440
Total including others	74,934,350	67,952,770

ASSETS		
Items	End of 1932-33 fiscal year (in yen)	Compared with the year before (in yen)
Unpaid capital	340,838,854	(de.) 48,088,508
Construction expenses for lines in operation	781,648,493	(in.) 16,997,103
Construction expenses for lines not yet opened	13,586,523	(in.) 11,625,530
Other development expenses	2,236,414,979	(in.) 51,689,160
Stores	19,340,490	(de.) 11,472,211
Provisional payments	134,252,867	(in.) 5,010,893
Suspense account	40,629,327	(de.) 16,316,829
Deposits	52,650,913	(de.) 21,158,888
Securities	196,745,871	(de.) 19,483,339
Cash	9,518,023	(in.) 191,947
Loss for the term	1,942,111	(in.) 1,163,495
Others	220,012,720	(in.) 28,688,135
Total	4,068,282,998	(de.) 58,529,282

LIABILITIES		
Items	End of 1932-33 fiscal year (in yen)	Compared with the year before (in yen)
Capital	2,270,234,409	(de.) 67,256,632
Special funds	5,712,203	(de.) 215,887
Legal reserve	79,105,585	(de.) 6,916,614
Voluntary ..	43,479,155	(de.) 7,915,593
Debentures	993,429,193	(in.) 9,778,601
Loans through mortgage syndicates	32,733,137	(in.) 14,145,169
Other loans	274,267,539	(de.) 18,056,532
Bills payable	111,541,225	(in.) 17,076,676
Money unpaid	46,899,794	(de.) 10,620,524
Suspense accounts	49,283,535	(in.) 4,547,759
Net profit for the term	43,353,136	(de.) 6,373,186
Others and total	4,068,282,998	(de.) 58,529,282

STATE RAILWAY BUSINESS in 1934

Year	Transportation		Income		Total Receipts (¥1,000)
	Passengers (1,000)	Goods (In metric tons)	Passengers (¥1,000)	Goods	
1934:					
Jan.	69,291	5,590,940	21,461	14,695	36,156
Feb.	55,324	5,871,520	18,204	15,503	33,707
Mar.	66,713	6,736,950	24,173	18,203	42,376
Apr.	131,134	6,209,870	31,802	17,525	49,327
May	74,146	6,356,980	24,922	17,416	42,338
June	63,390	5,873,810	20,284	16,158	36,442
July	66,273	5,813,140	20,601	15,595	36,197
Aug.	67,113	5,865,970	25,507	16,818	41,825
Sept.	76,816	5,865,280	20,971	16,837	37,808
Oct.	78,357	6,776,860	24,224	20,104	44,329
Nov.	67,359	6,652,740	21,768	29,240	41,008
Dec.	67,393	7,219,270	21,874	21,095	42,969
Total	883,309	74,934,000	275,791	208,689	484,482

Private Lines The eight leading private lines of the Kwanto had the best profits since 1931, their income totalling ¥21,093,000, compared with ¥20,964,000 for the year before. The eight Kwansai leaders also made more money, income jumping to ¥44,135,000, beating the 1931 mark of ¥43,726,000. April proved the best month for both the Kwanto and Kwansai private cars. April is popular because of the almost general movement of the populace into the country districts to look at the cherry blossoms. Kwanto companies showed better profit rates in both halves of 1934. There has been an increasing tendency for both Kwanto and Kwansai companies to go into sidelines. In most cases the idea is to embark upon some self-supporting business which at the same time attracts passengers. Pleasure resorts are the most common. Traction companies maintain theatres, golf links, bathing beaches, amusement parks and such enterprises. Some have combined department stores with their terminals, to draw suburban trade into the cities. Some supply electric power to the villages along their lines and have gone into real estate development directly and indirectly. Some operate bus lines as feeders to their regular services.

Tourist Industry

Three organizations, viz., the Board of Tourist Industry, the Japan Tourist Bureau (founded in 1912), and the Kokusai Kwanko Kyokai (founded in 1931), a foundation devoting itself solely to the carrying out travel publicity abroad, form the hub, from which radiate innumer-

able lines connecting it with other important organizations, such as the Society for International Cultural Relations and other cultural bodies, tourist associations in various districts, transportation concerns, hotels and all others that have anything to do with the tourist industry of Japan.

The Board of Tourist Industry is divided into two departments, one for general affairs and the other for business promotion. In addition to them, it has three boards of investigation dealing particularly with tourist resorts, hotel enterprises and treatment of tourists respectively. These boards comprise experts of the government and the public on the respective subjects. The Committee of Tourist Industry holds its general meeting at least once a year, when it decides what course to follow in carrying out any important undertaking.

The Kokusai Kwanko Kyokai runs an office in New York and Los Angeles, though the actual business is carried on there in the popular name of the Japan Tourist Bureau.

The branch offices of the Japan Tourist Bureau, both in Japan and abroad, number about 130 in all. Besides, it has agents in some important cities abroad in order to make the network of its service as extensive and satisfactory as possible.

Since the establishment of the Board of Tourist Industry, tourist organizations of a non-commercial basis have been successively founded in many parts of Japan, and at present the total number is in the proximity of 400.

FOREIGNERS WHO VISITED JAPAN in 1934-1935

Nationality	Duration of Stay			Total	Purpose	
	Less than 15 days	Less than 3 months	More than 3 months		Sight seeing	Official business
Americans	5,123	1,960	864	7,947	4,821	46
Canadian	217	84	89	380	188	3
British	3,155	2,419	817	6,391	3,384	32
German	452	488	375	1,313	476	15
French	363	397	123	883	403	26
Soviets	512	545	370	1,427	103	167
Hollanders	366	207	93	666	420	4
Hindues	108	156	405	669	137	
Philippinoes	175	135	75	385	244	2
Chinese	1,506	1,529	9,641	12,676	785	260
Others	873	955	631	2,459	876	134
Total	12,850	8,863	13,483	35,196	11,837	689
1933-34	10,046	7,007	9,211	26,264	9,455	471
Increase or Decrease(-)	2,804	1,856	4,272	8,932	2,382	218
Percentage of Increase or Decrease(-)	28%	26%	46%	34%	25%	49%

Nationality	Commercial business	Miscellaneous	Total (By Japanese vessels in parenthesis)	1933-34	Increase
Canadian	27	162	380 (187)	356	24
British	503	2,472	6,391 (3,306)	5,117	1,274
German	214	608	1,313 (837)	1,118	195
French	56	398	883 (454)	636	247
Soviets	293	864	1,427 (1,068)	1,091	336
Hollanders	74	168	666 (441)	350	316
Hindues	382	150	669 (268)	478	191
Philippinoes	23	116	385 (117)	326	59
Chinese	1,194	10,437	12,676 (8,993)	9,146	3,530
Others	290	1,159	2,459 (2,079)	1,854	605
Total	3,660	19,010	35,196 (21,578)	26,264	8,932
1933-34	4,552	11,786	26,264 (16,719)		
Increase or Decrease(-)	(-892)	7,224	8,932 (4,859)		
Percentage of Increase or Decrease(-)	(-20%)	61%	34% (29%)		

Railways in Chosen, Taiwan, Manchuria, etc.

Chosen

The first railway enterprise in Chosen dates back to 1899, when a railway linking Keijo (Seoul) with Jinsen (Chemulpo), 29.485 kilometres in length, was laid and opened to traffic by the Kei-Jin Railway Company. The outbreak of the Russo-Japanese War caused the military authorities of Japan to build the Keijo-Fusan, Keijo-Shingishu and Masan lines which were respectively opened to traffic in 1905 and 1906. In 1906 the Imperial Government of Japan nationalized the Keijo-Fusan

Line and also took over the Keijo-Shingishu and the Masan Lines from the War Office of Japan, placing all these lines under direct control of the Railway Bureau of the Korean Residency-General. Meanwhile the work of construction was steadily pushed on and in 1910 the Heijo-Chinnampo line was completed. On the spanning of the Yalu River with a swing bridge in 1911 the peninsular railway was brought into connection with the South Manchuria Railway. In 1914 the Taiden-Mokpo and Keijo-Gensan lines were completed, while in 1915 part of the

Gensan-Kwainei line was opened. In 1928 the Kankyo line which connects Kwainei to Gensan was completed, and in 1933 the Tomon line which connects Kwainei to Yuki was opened to traffic. The latter is connected with the Keito line of S. M. R. C. at Kainei, thus preparing a new eastern transportation facility between Chosen and Manchoukuo. On October 1, 1933, the total length of the State-owned lines in operation in Chosen was 3,263.9 kilometres. In 1932-33 the State Railways in Chosen conveyed 20,591,638 passengers, while the weight of goods hauled was 6,248,863 metric tons. The coaching receipts amounted to ¥18,111,091 and goods receipts to ¥20,575,819, and the total ¥38,686,904. In 1933 the number of private railway companies was 8. The aggregate length of these private railways open to traffic on March 31, 1933, was 1,139.1 kilometres.

The total length of tramways operated was 75.2 kilometres. (See Chapter XL for fuller informations.)

Taiwan

It was not until the cession of the Island of Formosa (Taiwan) from the Chinese Government to Japan that the island began to enjoy railway facilities, for, prior to that time, the only railroad existing was a small light railway between Keelung and Shinchiku built at the time of the Ching Dynasty. Soon after the cession, the Taiwan Government-General brought forward a plan, with the approval of the Diet, to build a railway connecting Takao with Keelung at the expense of ¥28,800,000. Work was started in 1889 from both termini and finished in April, 1908. This line now forms the trunk line in the island's communication system. The construction of this pioneer line was followed by other lines, that is, the Kyukyodo-Heito sec-

tion completed in 1912, the Taito line in 1917 and the Giran line in 1924. On March 31, 1934 the total length of the Government lines open to traffic was 881.7 km. In 1933-34 these lines carried 17,140,859 passengers and 5,086,727 tons of goods, bringing in ¥19,331,049.

Karafuto Railway

The first railway in Karafuto (Japanese Saghalien) was constructed by the Military Department in 1906 between Otomari, formerly known as Korsakovsa, and Toyohara, formerly Vladimolocka, 41.83 km. in length. It was a light railway with a gauge of 0.61 metre and exclusively used for military purposes. With the withdrawal of the military Government in April, 1907, the railway was transferred to the control of the Karafuto Administration and opened to public traffic in August of the same year. As traffic went on increasing the gauge was widened to 1.07 metres, some time in 1910, while construction of sections further north of Toyohara was started. Late in 1911 the work on the Toyohara-Sakaehama section being completed, the Otomari-Sakaehama section, 94.13 km. which now forms the trunk line in the island's communication, was opened to traffic. Construction work has been continued since and a branch line linking the Kawakami Mine with Konuma, and the Honto-Noda section on the west coast were completed and opened to business in 1914 and 1920 respectively. In addition, the construction of a branch line which connects Toyohara, the capital of the island, with Maoka on the west coast, was started in 1921 and opened to business in 1928. In 1934 the length of the Government lines was 342.9 km. while that of private railways was 237.5 km.

South Manchuria Railway

It was on September 5, 1905, that the Japanese Government, by virtue of Article 5 of the Peace Treaty concluded between Japan and Russia, acquired possession of the railways in Manchuria from Changchun to Dalny, now Dairen, and Port Arthur, now Ryojun, together with its branch lines, all the rights, privileges, and property attaching thereto, including the local mines formerly owned by the Chinese Eastern Railway. On June 7, 1906, Imperial Ordinance No. 142 was issued concerning the establishment of the South Manchuria Railway Company and on July 13 of the same year General Viscount Gentaro Kodama was appointed chairman of the promoters' committee which were composed of 80 members. On July 25, 1906, the presidency was assumed by General Viscount Masataké Terauchi, the then Minister of War, due to the death of General Kodama. The articles of association relative to the company were prepared by the committee on the basis of the Imperial Ordinance and the instructions of the Government. They were approved by the Government on August 18 and the establishment of the company was sanctioned by the Minister of Communications on November 1, 1906. The authorized capital of the company at first was ¥200,000,000, of which ¥100,000,000 represented the total of the appraised value of railways with properties and the mines at Fushun and Yentai as handed over to the company by

the Military Field Railway Department. The other half of the capitalization was offered to public subscription and the shareholders were guaranteed a 6 per cent. dividend per annum by the Japanese Government. By March, 1920, 800,000 shares representing 80 million yen were paid up, but with the development of various activities after the World War the capitalization was increased to 440 million,¹ one-half of the increased capitalization being taken up by the Japanese Government. The company is authorized to issue debentures not exceeding twice the amount of paid-up capital, and not exceeding the amount of total capitalization. The company has often issued debentures on the home and foreign markets and on such occasions both the principal and interest have been guaranteed by the Government. At the end of 1933 the authorized capital of the company was ¥800,000,000, paid-up capital ¥512,208,000; the total length of lines open to business was 1,129.1 kilometres. The gauge of these lines was 1.067 metres at first, excepting the Mukden-Antung Line. The company shortly after its establishment rebuilt the lines to the standard gauge of 1.345 metres. The doubling of track between Dairen and Changchun, 705.5 kilometres, was completed in 1915. In 1932-33 the number of passengers was 8,610,159, the tonnage of goods hauled 16,572,816 metric tons, the income from these was ¥99,834,359. (See Chapter on Manchoukuo.)

Motor Transport and Its Development

Behind Japan's motor transport system there is no such history of experimentation and endeavour as characterizes the arrival of the mo-

tor car in the West. The first car seen in Japan was one imported from America by a foreign resident of Yokohama in 1897, and then for the

next ten years there was no great increase in the number. In 1907 there were only 16 cars in the whole country. Then came a change. In 1912 there were 520 vehicles and a year later 1,000. In 1921, passenger cars numbered 4,683 and business cars numbered 7,439. The great earthquake and fire which destroyed Tokyo and Yokohama in 1923 brought about a great demand for motor cars because rail traffic was interrupted at various places and the help of motor cars was badly needed. In 1924, the number increased to 40,070, of which 27,959 were passenger cars and 12,097 were trucks. The rate of increase for the five years 1921-26 was for passenger cars 100.49 per cent. and for trucks 1,200.6 per cent. This rapid development of motor car transport has driven rikishas, electric cars and provincial railways into the back-

ground. Motor car passengers are increasing year after year, while passenger receipts on provincial railways are quickly decreasing. To the present, except in the vicinity of large cities, Japan has not been blessed with good roads, but the construction of first-class motor roads is being pushed ahead in all parts of the country and traffic is bound to make a phenomenal increase as the roads are completed.

Number of Cars The most recent figure on the number of cars in the Empire was taken by the National Resource Bureau of the Cabinet toward the close of 1933. According to this, the number was 106,788, including those cars in the territories. According to the investigation of the same Bureau the total number of motor cars at the end of October 1934, was 121,192.

NUMBER OF CARS

1933 and 1934

	Passenger Cars		Trucks		Special cars		Total
	Japan proper	Colonies	Japan proper	Colonies	Japan proper	Colonies	
1933	61,691	6,528	33,177	2,938	2,032	422	106,788
1934	68,746	7,378	38,346	3,991	2,142	589	121,192

Number of Cars in Principal Prefectures in 1934

	Passenger cars	Trucks	Special cars	Total
Tokyo	17,443	8,583	381	26,407
Osaka	5,034	2,965	165	8,164
Hyogo	2,695	1,475	85	4,255
Kanagawa	3,091	1,842	86	5,019
Aichi	2,852	1,968	62	4,882
Shizuoka	2,267	1,455	95	3,817
Fukuoka	2,462	805	100	3,367
Kyoto	2,492	1,038	58	3,533

Tokyo prefecture had the most and next came Osaka, Kanagawa, Aichi, Hyogo Shizuoka, Kyoto, and Fukuoka prefectures in the order named.

Commercial Passenger Cars Although the available figures are old, the business mileage of commercial passenger motor vehicles by fixed lines at the end of 1930 totalled

122,284 kilometres. If the business mileage of motor trucks by fixed lines be added, the total amounts to more than 160,900 kilometres. There were many cases of duplication of services by competitive lines, but if the actual business mileage is estimated as being one-third of the above total, it will be found that it was more than double that of the

Government-owned and private railway and tramcar services combined. The total number of companies and individuals engaged in bus business in 1933 reached 3,491. Among prefectures Fukuoka led with 219. The other prefectures which had over 100 were as follows: Kumamoto 198, Fukushima 197, Hokkaido 133, Oita 122, Kagoshima 107 Saga 100, Akita 100, and Nagasaki 100. These figures do not necessarily represent the prosperity or better facilities for motor transportation in the districts, but in many cases simply indicate the absence of any effective control of the business. The worst instance of the case is a load in Kumamoto where 10 buses are running.

The Ministry of Railways is going to control over such disorder or competition according to the Motor Transportation Business Law promulgated in 1934.

The prefectures which had geographical and geological handicaps had smaller numbers such as Okinawa 12, Tottori 27, Nara 28, Fukui 28, and Kochi 30. The prefectures in which the six big cities are located had comparatively small numbers indicative of a good control, i. e., Tokyo 71, Hyogo 80, Kanagawa 60, Osaka 42, Aichi 83 and Kyoto 62.

(As to the production and supply of motor cars in Japan see Chapter XIX.)

Motor Cycles The number of motor cycles in all Japan at the end of 1914 was 111, which became 265 in 1919, 332 in 1920, 424 in 1921, 519 in 1922, 609 in 1923, 516 in 1924, 962 in 1925, 852 in 1926, 1,008 in 1927, 1,119 in 1928, 1,477 in 1929, 2,213 in 1930, 2,888 in 1931, 3,439 in 1932 and 10,011 on October 31, 1934.

Automobiles Imported

Japan's imports of automobiles and parts are mostly from America.

The largest total imports were ¥34,903,822 in 1930. Imports since 1918 have been as follows:

Year	(In ¥1,000)	Value
1918		7,661
1919		11,228
1920		10,473
1921		8,067
1922		7,309
1923		13,482
1924		21,186
1925		11,682
1926		15,722
1927		18,281
1928		32,244
1929		33,608
1930		20,773
1931		16,329
1932		14,821
1933		14,382
1934		32,813

American Cars Used America dominates the Japanese motor car trade, supplying 90 per cent. of the total. At the end of 1927 there were approximately 54,000 motor vehicles in this country, principally of American manufacture. The Ford Motor Company, Yokohama, assembles materials imported from America and sells its products in the Japanese market. General Motors, Osaka, works on the same principles. Sales are well distributed over the utility range, with commercial vehicles in the lead. The growth of the one-yen taxi business brought a strong demand for cheap passenger cars, notably Fords, Chevrolets and Whippets among the Americans, Citroens among the French and Morris cars among the British. One-yen taxi concerns have been formed in all the leading cities of Japan. These concerns rent the cabs to drivers who pay, in addition to the rent, for the gasoline consumed. So great has been the success of the one-yen system that the metered taxicabs have all but disappeared from Japan. Moreover, there has been a considerable change in the type of car used. Cheap cars are

principally in evidence, although some second-hand machines, hand-me-downs of the older companies, are to be found.

Tractors Tractors have not found a large market in Japan. Those bought have found their way into

industrial fields, for the farms of Japan are small and comparatively few tractors can be utilized in agricultural work, though forestry has found a use for several. About 1,000 are now in use throughout the country.

Aviation

History of Development

The Early Period During the Satsuma Rebellion in 1877, two balloons were built. In 1891, Mr. Chuhachi Ninomiya made a model of an aeroplane shaped like a bird from his own design, and, in 1894, another shaped like an insect. In 1897, Mr. Isaburo Yamada obtained a patent for a kite balloon of his own invention. Two of these kite balloons were used in the siege of Port Arthur during the Russo-Japanese War. In 1907, a balloon corps was organized in the Telegraph Corps at Nakano, and, in June, 1909, a special military balloon investigation association was established. In March, 1910, a gliding test of aeroplane No. 1 of the Hino type was made at Toyamagahara, Tokyo, and, in October that year, a flying test of an aeroplane of the Narahara type was made. On December 19 of the same year, Lieutenant Tokugawa (now Major-General) flew 3,000 metres in four minutes in a Farman aeroplane at Yoyogi, and Captain Hino flew in a Glady aeroplane. This was the first time that an aeroplane flight was carried out in Japan.

The First Civilian Flight In the spring of 1911, airship No. 2 of the Yamada type was taken out of the hangar at Osaki, Tokyo, and made a successful cross-country flight. In March and April of the same year, an American flyer carried out an exhibition flight in Osaka and Tokyo;

on April 8, Mr. Shinzo Morita, who had studied flying in France, flew in a 45 h.p. monoplane over the Joto parade-ground in Osaka, this being the first flight by a civilian flyer in this country; and, in April that year, the aerodrome and flying ground at Tokorozawa were completed. In June, 1912, Mr. Atwater, an American flyer, conducted a series of exhibition flights by hydroplane on the sea off Nishinomiya near Osaka; and, in July that year, five officers were selected from each army division to be trained as flying officers. This marks the beginning of instruction in flying to military officers in this country. In the autumn of 1912, a number of aeroplanes and airships participated in the grand military manoeuvres. In February, 1913, the Teikoku Hiko Kyokai (Imperial Aeronautical Association) was established; on May 4 that year, Mr. Koha Takeishi, a civilian flyer, started on a Naruo-Osaka-Kyoto flight, but, when landing in the Fukakusa parade-ground in Kyoto, he met with disaster and died as the first victim of civilian aviation in Japan.

Contest of Civilian Aviators In 1914, a contest by civilian aviators was held at Naruo, near Osaka, under the auspices of the Imperial Aeronautical Association, and, during the Tsingtao campaign Japanese military aeroplanes took part in actual fighting for the first time and displayed their ability in scouting, in bombing the enemy fortress and in an aerial com-

bat with enemy planes. In 1915, a meet of civilian flyers was held in Osaka, and a military flying battalion was formed. Between January and April, 1916, American aviators visited Japan and performed trick flying at Naruo and other places; and, on April 27 that year, night flying was successfully carried out for the first time in this country. In 1917, the flying battalion was enlarged into the first and second battalions and a balloon corps. In April that year, Mr. Bird Smith, an American flyer, again visited Japan and carried out a series of high-class exhibition flights in Osaka and Tokyo. In April, 1918, Mr. Masao Goto, a private flyer, succeeded in making a non-stop flight between Tokorozawa and Osaka for the first time.

Military Flying School In April, 1919, the Military Aeronautical Department and the Military Flying School were established; and, on October 22 that year, the first mail transport flight between Tokyo and Osaka was carried out with success. In 1920, the Aeronautical Institute was established at Tsukishima, Tokyo; and, in May that year, two Italian aviators paid a visit to Japan by air. In March, 1921, the regulations for the control of aviation were put in force. In the autumn of 1922, the Japan Aerial Transport Institute started a regular flying service between Sakai and Shikoku by hydroplanes. In 1923, the military air force was made an independent arm. The Osaka Asahi Shimbun started a regular air service between Tokyo and Osaka in January and the Japan Aerial Navigation Co., Ltd., one between Osaka and Beppu in July that year. In March, 1924, the dirigible S. S. No. 3 exploded and, in September that year, the trial flight of the newly built airship Astra was carried out.

Air Mail Traffic In April, 1925, air mail traffic was started between Tokyo and Osaka; and, on July 25 that year, an aeroplane of the Asahi Shimbun took off from the Yoyogi parade ground in Tokyo and, on October 27, reached Rome after a flight of 16,000 kilometres (in stages) via Moscow, Paris and London. In 1926, the Japanese Navy purchased from Italy the dirigible S-No. 3, which was one with a semi-rigid envelope, introduced into Japan for the first time. In June, 1927, the Aviation Law came into effect. In May, the Coast Defence Association successfully carried out a flight round the mainland, and, in October that year, the airship S-No. 3 exploded, while participating in the grand naval manoeuvres. In April, 1928, Mr. Habuto, a civilian aviator, established a new record by flying 2,000 kilometres in 13 hours and 23 minutes; and, in July that year, aerial defence manoeuvres were conducted in Osaka.

The Air Transport Co. In 1929, the Japan Air Transport Co., Ltd., was established and inaugurated a regular air passenger carrying service between Tokyo, Osaka and Fukuoka, later extending it to Seoul and Dairen; and two Army scouting planes of the 88 type flew between Tachiarai and Heito without stopping, making a record of aerial connection between the mainland and Taiwan. On their homeward flight, one of the planes flew for 15 hours and 15 minutes, thus establishing a new record of staying in the air in this country. In 1930, the Japan Students' Aviation League was formed and associations for the study of aviation were established one after another in different universities and colleges in Tokyo and Osaka. Mr. Yoshihara, a civilian flyer, flew from Berlin to Tokyo via Siberia in 11 days and simultaneously, Mr. Azuma, also a civilian flyer, reached Tokyo

from Los Angeles via New York, London, Berlin and Siberia. In March, 1931, the airship No. 8 which had been made in Japan and belonged to the naval air force at Kasumigaura took off and stayed in the air for a record length of time of 60 hours and one minute.

The Aeronautical Institute In May, the Aeronautical Institute which ranks as the best research station in the world was completed six years after the starting of its construction. In the same month, the aeroplane "Young Japan" belonging to Hosei University, a member of the Students' Aviation League, set off for Europe from the flying ground at Haneda near Tokyo and, at the end of August, reached its destination, Rome. After the outbreak of the Manchurian trouble in September that year, our military planes participated in actual warfare for the first time since the Tsingtao campaign. In October of the same year, the aeroplane (Fokker No. 3-M) of the Japan Air Transport Company succeeded in flying between Taiwan and the mainland. In 1932, as a consequence of the Manchurian trouble, 64 "Aikoku" (Patriotic) planes were constructed with money contributed by the people generally, and, moreover, defence from aerial attack became much discussed in our principal cities and important economic centres. On February 23, our Navy planes fought with enemy planes in the air over Shanghai. In the fighting, Lieutenant Kotani was killed, while Lieutenant Ikuta shot down a Boeing plane of the enemy. The trial night flights between Tokyo and Tachiarai on the nights of April 20 and May 2 that year proved a success.

Present Condition of Civil Aviation

Modest but definite progress of

commercial aviation in Japan is indicated in the annual report of the Japan Air Transport Company, which reports mails carried by the company's planes during the year 1934 totalled 1,268,435, recording almost a 50 per cent. increase over the 647,601 of the previous year. Commencing with April 1, 1935, the company has resumed night flying and also has inaugurated a special early morning service bringing Mukden within a day's reach from Tokyo by way of Seoul and Dairen. The early morning service will be extended to Hsinking, the capital of Manchoukuo, on May 1. Further expansion of commercial aviation is expected to be facilitated considerably by the 15-year Government subsidy plan adopted by the Communications Ministry last year with a tentative budget of ¥200,000,000 for the whole period and originally a sum of ¥5,500,000 for the 1935-36 year but later cut to a smaller amount. During the last fiscal year the Japan Air Transport Company maintained the longest route of service totaling 2,118 kilometres between Tokyo and Dairen by way of Nagoya, Osaka, Fukuoka, Urusan, Seoul, Heijo and Shingishu. Of the other aviation concerns Japan Aviation Research Institute maintains a 290-kilometre service between Osaka and Matsuyama in Shikoku, by way of Takamatsu; the Tokyo Air Transport Company a 150-kilometre service between Tokyo and Shimoda; the Tokyo Asahi Shimbunsha, Ltd., a 415-kilometre service between Tokyo and Niigata; and the Japan Marine Air Transport Company a newly opened service between Matsue, Shimane Prefecture, and Hirosaki on the Japan Sea coast. The Tokyo-Shimoda service is operated only between May and September and the Tokyo-Niigata service between May and October. In 1934 the total

distance of commercial air routes in Japan was 3,751 kilometres.

Except the Japan Air Transport Company, which has a paid-up capitalization of ¥4,000,000 all Japanese commercial aviation firms are still operated on extremely limited scale, while even Japan Air Transport is assisted by an annual Government subsidy of ¥500,000. The operation of a commercial aviation concern in this country is still impossible without liberal monetary help from the State.

Japan at present has a total of only 152 civil airplanes, of which 34 are in use for regular air services. The Japan Air Transport Company has begun to witness a gradually sinking business since recently with a decrease of Government subsidy. It opened to business in April, 1929, and since its operation to service the company has contributed a great deal to the development of civil aviation in Japan. However, the results have not proved satisfactory, especially with recent years. Its profit rate was dropped considerably of late. Its business results since the opening of business follow:

	Paid-up capital (¥1,000)	Profit	Profit rate (In per cent)	Annual Dividend rate
1st h. 1929	2,500	355	28	5
2nd h. 1929	2,500	622	49.3	6
1st h. 1930	2,500	887	71.0	6
2nd h. 1930	3,955	1,033	52.2	6
1st h. 1931	4,000	979	49.0	6
2nd h. 1931	4,000	590	42.3	6
1st h. 1932	4,000	939	47.0	6
2nd h. 1932	4,000	924	46.0	6
1st h. 1933	4,000	844	42.2	6
2nd h. 1933	4,000	274	13.7	5
1st h. 1934	4,000	379	19.0	5
2nd h. 1934	4,000	254	12.7	5
1st h. 1935	4,000	189	9.5	5

The company will be given subsidy totalling ¥19,970,000 spreading over 11 years after its founding. For the first five years especially three years following its founding the subsidy was larger, but since then the amount has been decreasing. In the third year the subsidy totalled ¥3,580,000, but in the 10th year it will come down to ¥770,000 and in the last year it will be reduced to ¥120,000. The company opened aviation service between Tokyo and Toyama. The service to Formosa will start in January, 1936. The Fukuoka-Shanghai service is on the programme, but this depends on the improvement of Sino-Japanese relations.

REGULAR AIR SERVICE ROUTES IN JAPAN

Route	Distance (in kilometres)	Time required for flying	Carrying Passengers, freight and mail	Company or body operating route	No. of flights
Tokyo-Osaka	435	2 h. 30 m.	Passengers, freight and mail	Japan Air Trans- port Co., Ltd.	Twice (both ways) per day (except Sundays)
Osaka-Fukuoka	500	3 h.	"	"	"
Fukuoka-Urusan	240	1 h. 50 m.	"	"	Once (both ways) per day (except Sundays)
Urusan-Keijo	310	2 h. 10 m.	"	"	"
Keijo-Heijo	200	1 h. 10 m.	"	"	"
Heijo-Shinwiju	160	1 h.	"	"	"
Shingishu-Dairen	273	1 h. 40 m.	"	"	"
Osaka-Shanghai			"	"	Thrice a week
Osaka-Fukuoka	500		"	"	Not yet opened
Fukuoka-Shanghai	950		"	"	"
Osaka-Takamatsu	140	1 h. 10 m.	"	Japan Air Trans- port Insti- tute	Once (both ways) per day (except Sundays)
Takamatsu-Matsuyama	150	1 h. 10 m.	"	"	"

Route	Distance (in kilo- metres)	Time re- quired for flying	Carrying	Company or body operating route	No. of flights
Tokyo-Shimoda	150	55 m.	Passengers and freight	Tokyo Air Transport Co.	Once (both ways) on Monday, Wednesday and Friday each week
Ito-Shimoda	45	25 m.	"	"	"
Shimoda-Numazu	74	35 m.	"	"	"
Numazu-Shimizu	36	20 m.	"	"	"
Tokyo-Niigata	380	2 h. 30 m.	Freight and mail	Asahi Regular Air Service Ass'n	Three times (both ways) each week in summer

Remarks: Except on the Dairen-Shinwiju route of the Japan Air Transport Company, considerable reductions are made for the through rates both for passengers and goods that are carried beyond one fixed section between Dairen and other places.

Flying Grounds

Public and private flying grounds in Japan are as follows:

Public Grounds The Tokyo Airport. The Tokyo flying ground is situated at Suzuki-Shinden, Haneda-machi, Tokyo prefecture (Long. 139° 40' E. and Lat. 35° 30' N.). It is a flying ground on land and covers an area of 528,926 square metres. Its runway extends for 600 metres from east to west and as much from north to south. It slopes at a gradient of 1/500 and is divided into 330,000 square metres of exposed land, 198,000 square metres of grass land and 33,000 square metres of concrete paved zone. The usual direction of wind there is from south to north. In the grounds, there are a signal pole, a weighing beam, a compass correction stand, and a factory.

The Osaka Airport. The Osaka flying ground is situated at Kizugawajiri, Funa-machi, Minato-ku, Osaka (Long. 135° 23' E. and Lat. 34° 39' N.). It is a flying ground both on land and water in category and covers an area of approximately 350,000 square metres. Its runway extends for 720 metres

from east to north and 400 metres from north to south. The ground inclines in a minor degree from north to south and is overgrown with clover. The gliding range for hydroplanes is the sea outside Osaka harbour. The direction of wind there is generally from east to west. Chief provisions in the ground are a signal-pole, two tower-cranes, and a compass correction stand.

The Fukuoka Flying Ground. The Fukuoka flying ground is situated at Najima, Tadara-mura, Kasuya-gun, Fukuoka prefecture (Long. 130° 26' E. and Lat. 33° 39' N.). It is a flying ground for hydroplanes and its gliding range extends over the eastern part of Fukuoka Bay. The direction of wind there is generally from south to north. It is provided with a signal-pole, a crane, a weighing beam for hydroplanes, a compass correction stand, a gliding incline, an anchorage, etc.

The Urusan Flying Ground. The Urusan flying ground is situated at Urusan, Urusan-gun, Keisho-Nando (South Kyongsang-do), Chosen. It is a flying ground on land and its runway extends for 600 metres from east to west and for the same distance from north to south.

The Keijo Flying Ground. The Keijo flying ground is situated at Nyoito, Ryukomen, Koyo-gun, Keikido (Kyongki-do), Chosen. It is a flying ground on land and its runway extends for 600 metres from east to west and for the same distance from north to south.

The Dairen Flying Ground. The Dairen flying ground is situated at Choushuitzu, Kwantung Province. It is a flying ground on land and its runway forms a circle with a 600-metre diameter.

Private Grounds The Nakajima Aeroplane Works. This flying ground is situated at Minami-Hamakawa, Oi-machi, Yebara-ku, Tokyo, and is for use by hydroplanes.

The Hokkai Times Ground. The Hokkai Times flying ground is situ-

ated at Kita Nijushijo and Niju-gojo, Sapporo. It is a flying ground on land and its runway extends for 190 metres from east to west and 380 metres from north to south.

The Kawanishi Aeroplane Co. This flying ground is situated at Naruo-mura, Muko-gun, Hyogo prefecture, and is for use by hydroplanes. Its gliding range is on the sea off No. 1, Ohigashi, Naruo, Naruo-mura.

Aeronautical Wireless Stations

The following wireless stations exist with the special object of supplying aeroplanes flying the Tokyo-Dairen and the Osaka-Shanghai routes with weather reports and also of reporting their arrival and departure:

Name	Call signal	Site
Tokyo Wireless Station	JXS	Otemachi Nichomé, Kojimachi-ku, Tokyo.
Hakone "	JXH	Segyodaira, Mishima-machi, Takata-gun, Shizuoka prefecture.
Kameyama "	JXK	Ochizaki, Kameda, Kameyama-machi, Suzuga-gun, Miyé prefecture.
Osaka "	JXO	Dojima Nichomé, Kita-ku, Osaka.
Fukuoka "	JXF	Najima, Tadara-mura, Kasuya-gun, Fukuoka prefecture.
Itsuhara "	JXI	Itsuhara-machi, Shimokata-gun Nagano prefecture.
Tomiyé "	JXY	Minami Tomiyé-mura, Matsuura-gun, Nagasaki prefecture.
Urusan "	JXM	Hokumen-Dotei, Urusan, Urusangun, Keisho-Nando (South Kyongsang-do), Chosen.
Keijo "	JBB	Hommachi Itchomé, Keijo (Seoul), Keikido (Kyonki-do) Chosen.

Land Marks for Aviators

In order to secure the safety of

aerial navigation, the following places are marked with their names in large white "Kana" letters:

Mark	Place
Numazu	Tsuruta, O-oka-mura, Sunto-gun, Shizuoka prefecture.
Hamamatsu	Matakogawa, Tomizuka-mura, Hamana-gun, Shizuoka prefecture.
Kameyama	Nomura, Kameyama-machi, Suzuka-gun, Miyé prefecture.
Shōdoshima	Shikai-mura, Azuki-gun, Kagawa prefecture.
Imabari	Ohama, Chikami-mura, Koishichi-gun, Ehimé prefecture.
Murozumi	Aburada, Murozumi-machi, Kumaké-gun, Yamaguchi prefecture.
Nakatsu	Tsunoki, Nakatsu-machi Shimoké-gun, Oita prefecture.
Yukubashi	Yukubashi, Yukubashi-machi, Kyoto-gun, Fukuoka prefecture.
Urusan	Sansanri, Urusanmen, Urusan-gun, Keisho-Nando (South Kyongsang-do), Chosen.
Kwokan	Nasanri, Kwokanmen, Yeido-gun, Chusei Hokudo (North Choong-chong-do), Chosen.

Taiden	Kudori, Gainamen, Taiden-gun, Chusei Nando (South Choongchong-do), Chosen.
Ten-an	Seiseiri, Ten-anmen, Ten-an-gun, Chusei Nando (South Choongchong-do), Chosen.
Shariin	Tetsusanri, Shriinmen, Hozan-gun, Kwokai-do (Whanghai-do), Chosen.
Heijo (Pyongyang)	Jinkori, Seisenmen, Daido-gun, Heian Nando (South Pyong-an-do), Chosen.
Teishu	Jogaido, Teishumen, Teishu-gun, Heian Hokudo (North Pyong-an-do), Chosen.
Shingishu	Mirokudo, Kojomen, Gishu-gun, Heian Hokudo (North Pyong-an-do), Chosen.
Pitsuwo	Pitsuwo, Kwantung Province.

Civilian Aeroplanes

Civilian aeroplanes on October 31,

1934, for which certificates of airworthiness and registry certificates have been granted, are as follows:

Classification	Description	Number	Total number
Free from all restrictions	Aeroplanes	17	17
	Hydroplanes		
Not qualified for trick flying	Aeroplanes	122	140
	Hydroplanes	18	
Total	Aeroplanes	136	157
	Hydroplanes	21	

Note: 50 planes were damaged by the typhoon of September 21, 1934.

Civilian Aviators in Japan Licensed Japanese civilian aviators on Octo-

ber 31, 1934, are as follows:

Classification	1st class	2nd class	3rd class	Total
Aeroplane and hydroplane pilots	226	307	89	622
Navigators	19	203	—	222
Mechanics	—	—	—	78
Dirigible balloon pilots	—	—	—	2

Aerial Lighthouses According to the first plan of the Department of Communications 19 aerial lighthouses will be established along the Tokyo-Osaka route and the same number along the Osaka-Fukuoka line. For the former the four larger ones, at Hakone (Shizuoka prefecture), Yaizu (Shizuoka), Chita (Aichi) and Ikoma (Nara) are already erected. This has been changed and 20 lighthouses have been erected between Tokyo and Osaka. The erection of the same number of aerial lighthouses between Osaka and Fukuoka is also contemplated. In the following list those under the heading Tokyo and Osaka have already been erected, while those between Osaka and Fukuoka will be erected:

Tokyo-Osaka	Prefecture
Place	
Totsuka	Kanagawa
Hiratsuka	"
Manazuru	"
Jikkoku	Shizuoka
Numazu	"
Tagonoura	"
Yaizu	"
Kanaya	"
Hamamatsu	"
Toyohashi	"
Manzu	"
Tokyo-Osaka	Prefecture
Place	
Chitamotomiyayama	Shizuoka
Akeno	Miye
Chisezaki	"
Seki	"
Kata	"
Tsuge	"
Uyeno	"
Kasagi	Kyoto
Ikomayama	Nara

Osaka-Fukuoka	
Place	
Suma	Hyogo
Murosu	"
Tamatsu	Okayama
Okayama	"
Hayashima	"
Kasoka	"
Hachigaminé	Hiroshima
Kamikitagata	"
Minaga	"
Kumanoato	"
Hiroshima	"
Iwakuni	Yamaguchi
Takamori	"
Kushihama	"
Nakaseki	"
Ube	"
Karita	Fukuoka
Wakamatsu	"
Kanegasaki	"
Hiyamizutogé	"

Organizations connected with Aviation

The Aviation Council This body is under the direct control of the Minister of Education and returns reports on matters submitted by him; it also deliberates on important matters concerning the study of the basic theories of flying-machines and makes recommendations to the Cabinet Ministers concerned. It is composed of a president and 20 councillors, and, in case of particular need, councillors ad interim are appointed. The councillors are the Vice-Ministers of the Departments of War, Marine, Education, and Communications, as well as those who have deep knowledge and wide experience, while the councillors ad interim are selected from among scholars and experts.

The Imperial Aeronautical Association The Imperial Aeronautical Association was established in 1913 with the object of encouraging and protecting the development of science and art pertaining to aviation and of flying machines and their parts and accessories as well as diffusing knowledge of, and cultivating taste for, aerial flight among the

people. A sum of ¥500,000 granted from the Privy Purse was made a foundation-fund, and, with interest accruing from it and with receipts from dues paid by its members (¥2.00 per member), the Association carries on its undertaking, the principal items of which are presenting persons who fall victims to aviation and accidents connected thereto with condolence money, awarding bounties to persons connected with aviation, and giving lectures, cinema shows, and exhibitions concerning aviation. It also publishes a monthly journal containing aviation news at home and abroad. It has an Imperial Prince as patron and a board of directors of 30 members, including a president, two vice-presidents, and a managing-director. In addition, it has five auditors and over 105 councillors, from whom directors are elected. Its offices are located at No. 7, Sakurada Hongo-cho, Shibaku, Tokyo.

The International Aviation Commission This Commission is a permanent organ created in accordance with the provisions of the Treaty relating to Aviation, and makes or receives proposals bearing on alterations and modifications of the provisions of the treaty to and from the signatory Powers, and reports to them such alterations and modifications as are adopted.

The International Aviation Federation This Federation consists of various corporations relating to aviation in different countries and chiefly aims at the progress of civil aviation through mutual consultation and also the promotion of mutual facilities. Besides, it undertakes recognition of world flying records. The Imperial Aeronautical Association represents Japan in the Federation.

The Aeronautical Institute The Aeronautical Institute was first established at Etchujima in Tokyo in

April, 1918 by taking over the business of the Commission on Investigation of Aeronautics organized in the Tokyo Imperial University in April, 1916, with the object of making researches in aeroplanes, airships, balloons, motors, aviation psychology and other matters concerning aviation. Subsequently, in the earthquake and fire of 1923, the institute was destroyed and was newly constructed at Komaba in the grounds of the Department of Agri-

culture of the Tokyo Imperial University in 1927. It is divided into the departments of air pockets, aeroplanes, physics, chemistry, metallurgy and material, and ranks first in the world in point of equipment. The present president is Baron Chu-zaburo Shiba, Doctor of Science and Professor at the Tokyo Imperial University.

Training Institutes Below are lists of institutes established for the training of aviators:

PRIVATE INSTITUTES AND SCHOOLS FOR THE TRAINING OF

CIVILIAN AVIATORS

Name	Site	Representative
Japan Air Transport Institute	Shin-Koyenchi, Ohama, Sakai, Osaka prefecture.	Choichi Inouye
Japan Flying School	Tachikawa-machi, Tokyo prefecture.	Tamotsu Aiba
Kita-Nippon Flying School	Ujiina-mura, Sapporo-gun, Hokkaido.	Takanori Nakamura
Nishida Aeroplane Institute	Kizugawajiri, Funamachi, Minato-ku, Osaka.	Chuyemon Nishida
Hamamatsu Aeroplane Works, Ltd.	Tomuzuka-mura, Hamana-gun, Shizuoka prefecture.	Tetsuo Hasegawa
Dai-ichi Aeronautical School	Funabaashi-machi, Chiba prefecture.	Yetsutaro Munezato
Nagoya Flying School	Obatsgahara, Higashi-Kasuga-gun, Aichi prefecture.	Fukuhi Mihara
Ando Flying Institute	Shin-Maiko, Asahi-mura, Chita-gun, Aichi prefecture.	Kozo Ando
Tokushima Aeronautical School	Kamona-machi near Tokushima	Tomokage Sakata
Japan Light Aeroplane Club	Samnuma, Tanuma-machi, Chiba prefecture.	Otojiro Ito
Misono Flying School	Tachikawa-machi, Tokyo prefecture.	Nishio Suzuki
To-a Flying College	Tsudanuma-machi, Chiba prefecture.	Sami Kawabe
Tokyo Flying School	Susaki, Fukagawa-ku, Tokyo.	Tatsugoro Yendo
Japan Students' Aviation League	Tachikawa-machi, Tokyo prefecture.	—
Teikoku Flying School	Tsudanuma-machi, Chiba prefecture	Kikuo Suzuki,
Asia Aeronautical School	Suzaki, Fukagawa-ku, Tokyo	Kintaro Iinuma

FLYING MACHINE AND MOTOR MANUFACTURERS

Aeroplane Manufacturers

Name	Site of factory
Mitsubishi Aeroplane Co., Ltd.	Oyé-machi, Minami-ku, Nagoya
Kawasaki Shipyard, Ltd.	Higashijiriiké, Hyogo, Kobé
Aichi Time-Piece and Electric Apparatus Co., Ltd.	No. 15 Funagata, Sennen-cho, Minami-ku, Nagoya
Nakajima Aeroplane Works	Ota-machi, Nitta-gun, Gumma prefecture
Ishikawajima Aeroplane Works, Ltd.	Tachikawa-machi, Tokyo prefecture
Kawanishi Aeroplane Co., Ltd.	Hyogo.
Tokyo Gas & Electric Industry Co., Ltd.	No. 100-1 chome, Iriarai, Omori-ku, Tokyo

Motor Manufacturers

Mitsubishi Aeroplane Co., Ltd.	No. 7 Oyé-machi, Minami-ku, Nagoya
Kawasaki Shipyard, Ltd.	Higashijiriiké, Hyogo, Kobé
Tokyo Gas and Electric Industry Co., Ltd.	No. 100 Iriyamazu, Iriarai-machi, Yebara-ku Tokyo
Tokyo Factory of the Nakajima Aeroplane Works, Ltd.	Ogikubo, Suginami-ku, Tokyo
Aichi Time-Piece and Electric Apparatus Co., Ltd.	No. 15 Funagata, Sennen-cho, Minami-ku, Nagoya

Balloon and Dirigible Manufacturers

Fujikura Industrial Co., Ltd.	No. 132 Osaki-machi, Yebara-ku, Tokyo
Tokyo E. C. Industrial Co., Ltd.	No. 437 Ikejiri-machi, Setagaya-ku, Tokyo

CHAPTER XXVI

SEA TRANSPORTATION

Historical Background

The dawn of Japan's history is associated with marine activities. The national mythology is rich in stories of sea adventures. Later authentic records fully demonstrate the energy and spirit of the early Japanese, who had to fight their way through stormy seas in the primitive craft of those days. The period covered by the latter half of the sixteenth century and the beginning of the seventeenth century marks the golden age of marine activity of Old Japan. This was in a great measure due to the stimulus received by the Japanese through the appearance of Portuguese and other foreign ships in Japanese waters. Japanese vessels not only were in evidence in South China and the South Sea Islands, but cruised the Pacific as far as Mexico and fought their way through the Indian Ocean and the Cape of Good Hope to Europe. Military rulers encouraged maritime enterprises and numerous large vessels were built. Thus, the shipping trade between Japan and the South Seas and India, carried on under letters patent and numbering no less than two hundred ships at one time, engaged in commerce with twenty different countries, which were eventually dotted with regular Japanese colonies.

Ban on Shipping Activities Unfortunately, while the maritime prosperity of Japan was thus making progress by leaps and bounds, the Tokugawa Shogunate took the drastic measure of secluding the country and forbidding all foreign inter-

course. Its first act was to place a strict ban on the propagation of Christianity in 1613. Subsequently, in 1634, all commercial relations with foreign countries were stopped, and in 1636 the construction of large ocean-going vessels was forbidden. For a long period of more than two centuries thereafter, the ocean trade of Japan was held in a state of forced suspension.

The Well-timed Visit The Commodore's visit in 1853 was well timed, inasmuch as by this time many Japanese amongst the intelligent class were dimly aware of the conditions outside Japan, and the Shogun's Government amid the confusion of opinion took a firm step and signed the treaty. This event was followed in 1854 by the conclusion of similar treaties with leading nations of Europe. Commercial intercourse with foreign countries was thus resumed, and the time-worn restrictions on navigation and ship-building were withdrawn. Then was formed the nucleus of the present mercantile marine of Japan. The Shogun's Government, finding the old Japanese systems of ship-building and navigation utterly out-of-date, promptly decided upon introducing the ideas of the outside world. For this purpose, students were sent abroad, while foreign experts were engaged to work in Japan. A ship-building yard was established in Yokosuka, and a naval school in Nagasaki.

After the Meiji Restoration

The First Steamship Co. In the third year of Meiji the Government promulgated the Mercantile Marine

Regulations. In the same year, the pioneer steamship concern was inaugurated and a new leaf in the history of the Japanese mercantile marine was turned. The first company to be incorporated was the Kwaiso Kaisha, or Forwarding and Transport Company, which was later re-named the Teikoku Yusen Joki Kaisha (Imperial Mail Steamship Co.). Mampei Kimura was one of the chief promoters. A regular service was maintained between Tokyo and Yokohama and between Osaka and Kobé. Yataro Iwasaki, founder of the Mitsubishi interests, incorporated a shipping company called Kutsumo Shokai, later re-named the Mitsubishi Shokai in 1870 and inaugurated a regular passenger service between Tokyo and Kochi in Shikoku, from which Iwasaki hailed. Three steamers formerly owned by Lord Yamanouchi, former feudal lord of Tosa, were employed in the service. When the Japanese Government sent a punitive force against Formosa in 1874, all foreign steamship companies interested in the Far Eastern shipping trade declared neutrality and rejected the Government's offer to charter their ships. Perplexed at this, the Government ordered the Mitsubishi Shokai and Teikoku Joki to offer their ships, and thus the transportation of troops was smoothly effected.

The N. Y. K. Comes into Existence Shigenobu Okuma, then Minister of Finance, and Toshimichi Okubo, then Home Minister, made efforts to organize the Yubin Kisen Mitsubishi Kaisha after the termination of the expedition. The above two firms were dissolved and the Government's ships were handed over to the new company. The Mitsubishi interests made large profits under Government protection. Kaoru Inoué and Admiral Tsugumichi Saigo, who were Okuma's political opponents,

organized a corporation to rival the Mitsubishi's as a means of overthrowing Okuma and ordered, in 1882, Eiichi Shibusawa, Takashi Masuda and others to form a semi-Government shipping company under the name of the Kyodo Unyu Kaisha. Keen competition later ensued between the two and threatened to lead them to ruin. Consequently, the Government ordered them to effect a merger. In 1885 the Nippon Yusen Kaisha was incorporated through the investment of ¥5,000,000 by the Mitsubishi and ¥6,000,000 by the Kyodo Unyu. At the time of founding, the company owned 58 steamers with an aggregate of 68,700 tons. The Pacific Mail Steamship Company of America was then operating a regular line between Yokohama and Shanghai with the s. s. Golden Age, the Costa Rico and two other ships, all of which were purchased by the Japanese Government in 1874 for the transportation of Japanese soldiers on the expedition to Formosa. Iwasaki waged a freight war with the Pacific Mail at that time and finally purchased these four ships for \$8,000,000. This price included the Shanghai wharf now owned by the Nippon Yusen Kaisha at Whampoo.

The O. S. K. About this time the Osaka Shosen Kaisha was established in Osaka. It was then a small concern maintaining services in the Inland Sea of Japan, but later developed into a large company. The Nippon Yusen Kaisha, while maintaining the services originally inaugurated by its predecessors, opened new lines to Korea and North China, and one between Shanghai and Vladivostok; and in 1891, it inaugurated the service between Kobé and Manila and commenced to despatch occasional ships to Australia. In 1892, the N. Y. K. Japan-Bombay service was opened, the

first regular Japanese steamship service with a far away foreign country. The rapid progress of Japanese shipping can be proved by the fact that in the beginning of 1891 the total tonnage owned in Japan was 100,000, and this figure was increased by 10,000 tons in the following year.

The Sino-Japanese War During the Sino-Japanese War of 1894-5, when the greater part of Japanese space was requisitioned for transport purposes, a large number of steamers was purchased by Japanese owners and many others were chartered by them, and Japan, having complete command of the sea, was able to maintain its established oversea services. At the close of the war, Japan found its merchant marine had grown by 100 per cent. compared with the figures of before the war. Meanwhile, the Nippon Yusen Kaisha lost no time in consolidating its established lines and in 1896 it inaugurated three trunk lines, viz., the Yokohama-London-Antwerp line, the Hongkong-Japan-Seattle line and the Yokohama-Manila-Australia line. In 1898 the Toyo Kisen Kaisha was established, and it maintained a few regular fast service between Hongkong and San Francisco via Japanese ports with three fine new passenger boats. The Osaka Shosen Kaisha opened a new line on the Yangtze-kiang in 1898. In the following year, this company opened a line from Formosa to Hongkong, via Amoy and Swatow. The increase in Japanese tonnage at that time was remarkable. Whereas, at the end of 1897 it amounted to only 270,000 tons, it suddenly increased at the end of 1898, to 477,000 tons, the ratio of growth continuing, until the gross tonnage of steamers of 1,000 tons and over at the end of 1903 amounted to 521,000.

Foreigners' Services Mention must

not be omitted of the valuable contribution made by foreign experts to the development of the Japanese mercantile marine. Through the remarkable foresight of Iwasaki, not only foreign captains, officers, engineers and pursers were freely engaged afloat, but numerous experts, business and technical, were employed on shore to conduct the business of the Nippon Yusen Kaisha. A large number of these foreigners remained in the company's service for a considerable time after its formation. Foremost among them were A. R. Brown, Alexander Macmillan, T. H. James, J. W. Ekstrand, W. H. Hasewell, Hector Frazer, etc., whose names are still familiar to old timers in the Far Eastern shipping trade.

One noteworthy fact in connection with the development of the shipping business is the advance made by Japanese mariners. Japan imported the science of navigation from the West and early in the Meiji Era, captains, chief engineers and mates were mostly foreigners. When the Nippon Yusen Kaisha was first organized in 1884, the company owned 57 steamers with a total tonnage of 60,000 and employed about 174 foreigners, the number being increased to 224 during the Sino-Japanese War. During the Russo-Japanese War, Japanese mariners were centres of praise, and their credit was greatly raised. After the war, in 1907, the number of foreigners was reduced to 87 and in 1920 there was not a single foreigner in a Japanese ship.

The Russo-Japanese War The Russo-Japanese War broke out early in 1904, and Japan found itself compelled to undertake transport work of the biggest magnitude ever known in its history. This situation naturally created the necessity of purchasing additional tonnage, with the result that at the end of 1906 the

total merchant marine reached a little more than one million gross tons, and Japan thus ranked sixth among the great maritime Powers of the world. Through the expansion of trade after the war, sufficient employment was found for these steamers. The Toyo Kisen Kaisha opened its South American service before the war terminated. The Osaka Shosen Kaisha started in 1909 its Far East—Puget Sound service. Elsewhere, the expansion was also pronounced, for in 1907 four large Japanese companies trading on the Yangtze-kiang pooled their interests and formed the Nisshin Kisen Kaisha (Japan-China Steamship Company) and the Osaka Shosen Kaisha in the meantime inaugurated the Tsuruga-Vladivostok and the Osaka-Kobé-Moji-Dairen lines. The general slump in the shipping trade which prevailed all over the world during this period was felt in Japan, but the country was not so badly hit as to prevent its further growth, for, at the end of the year when the World War broke out, the total gross tonnage of ships flying the Japanese flag was 1,590,000, of which 1,310,000 tons represented ships of more than 1,000 gross tons each. Turning to the share which Japanese merchant shipping contributed to its foreign commerce, it was found that, whereas, prior to the Sino-Japanese war (1894-5), only 10 per cent. of imports and exports were carried by Japanese ships, the proportion increased to 40 per cent. after the Russo-Japanese War (1904-5), and just before the commencement of the World War, it was further augmented to 48 per cent.

The World War An extensive dearth of tonnage and the consequent pressing demand for space all over the world, caused by the World War, created a unique situation for Japanese merchant ship-

ping, so much so that the total gross tonnage suddenly swelled by a million tons within a brief period and the yearly shipbuilding capacity increased from 50,000 tons to a half million gross tons. The share contributed by Japanese vessels to the transportation of imports and exports increased to nearly 80 per cent., the remaining 20 per cent. being carried by foreign ships. Many new shipping services to all corners of the globe were opened one after another, and besides rendering distinguished service to the cause of the Allies, the Japanese mercantile marine maintained a regular fortnightly Japan-England mail service, and despatched extra ships to European waters during the war. Further more, in response to the call of the United States after that country participated in the War a group of Japanese shipowners delivered a number of steamers aggregating 150,000 tons to the United States Government on charter at rates considerably lower than those which shipowners at that time could have obtained in the open market.

The inevitable aftermath of the war abnormalities—shipping depression—set in early in 1920, and this is still being felt all over the world. Japanese shipping in common with that of all other nations is undergoing a severe test to its perseverance and fortitude. Despite this Japanese shipping has considerably increased. Of the latest developments in Japanese shipping the Toyo Kisen Kaisha transferred all of its Pacific ships to the Nippon Yusen Kaisha, by which the latter became one of the greatest shipping companies of the world.

Aid and Encouragement In 1874, the Government established the policy that the shipping business should receive Government subsidies and it gave to the Mitsubishi Co., which rendered great services during the

Formosan affair, thirteen ships and guaranteed to subsidize the company with ¥250,000 for navigation and with ¥15,000 for training seamen for a term of fifteen years. In return for this, the company was to run regular ships on prescribed routes, carry mails without charge, and meet any requisition of ships by the Government. Each succeeding Government has recognized the functions that shipping companies have to discharge in peace and war, and have never failed to apportion money from the national treasury even in times of retrenchment. Some of the principal decrees connected with the encouragement of shipping are as follows:

(1) The first subsidy to the Mitsubishi Company in September, 1874.

(2) The second and third orders to the same company in 1875 and 1881.

(3) The subsidy to the Nippon Yusen Kaisha in September, 1884.

(4) The subsidy order issued to the Osaka Shosen Kaisha in 1886.

(5) Enactment of the Navigation and Shipbuilding Act in 1895.

(6) Amounts to subsidize lines to Bombay, Australia, Europe and America were granted.

(7) Subsidized lines were extended later to the Inland Sea, the Kinkai (near seas), the Yangtze River route, Canton, Tientsin, Dalny, the South Seas, West Coast of America, the South American routes, etc.

Working Agreements

Japan's three largest shipping concerns, the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the Kinkai Yusen Kaisha, the last-mentioned being a subsidiary of the first, entered into an agreement in April, 1931, on shipping co-operation as a counter-measure for the shipping depression. The basic princi-

ples involved in the agreement were the mutual respect of services operated by them, the readjustment of steamship routes, the extension of the pooling system and co-operative management. The agreement is to last for 10 years. As the result of this agreement, the Nippon Yusen Kaisha abolished its South American Atlantic service, leaving its operation to the Osaka Shosen Kaisha. The Osaka Shosen Kaisha discontinued the operation of its Puget Sound line, leaving the entire interest of the service to the Nippon Yusen Kaisha, and the Osaka Shosen Kaisha entrusted the management of its North European line west of Suez to the Nippon Yusen Kaisha. The mutual use of agents, joint acceptance of passenger and goods transportation, joint utilization of shipping, land and sea equipment, and the joint purchase of fuel and ships' materials were agreed on among them.

The Present State

Owing to the improvement of dollar exchange, the earning of freight quoted in the U.S. dollar was reduced by 20 or 30 per cent. Where the freight is quoted in sterling some difficulties were experienced in placing steamers, while the intended boycotting of Indian cotton by the Japanese cotton spinners served also to depress the market. For these reasons, the freight market was not as active in the latter part of 1933 as it was during the earlier season of the year. However, the indication was that it clearly had passed the worst stage such as it experienced in the last several years, and the sea transportation circle looked with much hope for the future for the first time in many years.

To explain the situation more fully, the Nippon Yusen Kaisha, Ltd., showed the possibility to resume the

payment of dividend, which had been withheld for many terms. Chosen Yusen Kaisha, Ltd., declared that it would be able to pay dividend of 3 per cent. Meiji Kaibun Kaisha, Ltd., which was able to pay dividend of 4 per cent. in the previous term would perhaps increase it by 1 or 2 per cent. In this manner, the sea transportation circle is in a somewhat buoyant atmosphere, the like of which was not seen for many years.

Tramp Ships The most important overseas work of Japanese tramp ships is connected with the shipment of Oregon lumber from Puget Sound to Japan and other Oriental countries; of Australian wheat to British India and Japan; of Manchurian staple products, mostly beans, to Europe; grain from N. America to Europe; coal from Wales to Port Said; and of Saghalien lumber to Japan. In the near-sea service, the transportation of soy beans and bean cake from Dairen to Japan and Kyushu coal from Wakamatsu to different ports is the most important business. In the ocean-going service, the Oregon lumber freight is taken as the criterion for all other steamer freights and in the near-sea service the Wakamatsu-Yokohama coal rate is the important one.

Government Subsidies

There are eight steamship companies working overseas and domestic services under governmental subsidy. These concerns are the Nippon Yusen Kaisha, the Osaka Shosen Kaisha, the Nisshin Kisen Kaisha, the Nanyo Yusen Kaisha, the Kinkai Yusen Kaisha, the Kokusai Kisen Kaisha, the Kita Nippon Kisen Kaisha and the Kuribayashi Shosen Kaisha. The subsidy is paid to these companies for a period of one year from April to March in most cases, while in certain cases the subsidy

runs over a period of three years.

The N. Y. K. Yokohama-London service has Kobé, Shanghai Hongkong, Singapore, Colombo, Suez, Port Said and Marseilles as intermediate ports of call. Its San Francisco line has Honolulu as the only intermediate port of call on both outward and homeward (eastward-bound) trips. On the westward-bound trip it has Nagasaki, Shanghai, and Hongkong as such. The company's Yokohama-Seattle (eastward-bound) service has Victoria or Vancouver as ports of call and its westward-bound service has Kobé, Moji and Shanghai as ports of call. Its South American Coast line between Yokohama and Valparaiso (eastward-bound) has Honolulu, Manzanillo, or Salina Cruz, Callao and Iquique as ports of call and its westward-bound line has as ports of call Kobé, Moji and Hongkong. The N. Y. K. Yokohama-Melbourne service has as ports of call Kobé, Nagasaki, Hongkong, Manila, Davao, Thursday Island, Brisbane and Sydney both ways.

The O. S. K. South American East Coast line (Yokohama-Buenos Aires) for its outward bound trip has as ports of call Kobé, Nagasaki, Hongkong, Singapore, Cape Town, Rio de Janeiro and Santos. On homeward bound the line has Santos, Rio de Janeiro and Christoval as ports of call. The O. S. K. African East Coast line operates between Kobé and Cape Town and on its outward bound has Moji, Hongkong, Singapore, Colombo, Mombasa, Zanzibar, Dar-Es-Salaam, Beira, Lourenço Marques and Durban. On homeward bound the line has Durban, Lourenço Marques, Mombasa, Zanzibar, Singapore and Moji as ports of call. These are the most important steamship lines operated under Government subsidy.

The Kokusai Kisen Kaisha, owner

of motor and steam vessels aggregating 310,000 tons deadweight, has reached new heights of prosperity under the able management of Mr. S. Kurokawa, President, the net profit for the half-year ending December 31st, 1934, having amounted to over ¥1,460,000. During the last few years, seven speedy new motor vessels have been built and placed in commission on the Orient-New York express service whilst three 19-knotters now under construction will be added to the fleet early next year. This concern which was mainly engaged in tramp shipping before, now maintains several regular services of international importance, thus contributing much towards the betterment of Japan's foreign payments.

In addition, the Nanyo Yusen Kaisha operate under Government subsidy the South Sea Line between Kobé and Sourabaya and Java lines. The former line has Macassar, Sourabaya, Samarang and Batavia on outward trip. Ships sail direct for Kobé on homeward trip. The Nishin Kisen Kaisha operates the China Coast line between Shanghai and Canton as southern line and between Shanghai and Tientsin or Taku as northern line. The company also maintains the Shanghai-Hankow line with Chenkiang and Nankiang as ports of call, the Hankow-Ichang line with Shasi as port of call, the Hankow-Hsiangtan line with Changsha as port of call, the Hankow-Chagteh line, and the Ichang-Chungching line, all these five lines being known as the Yangtze River services.

The Kinkai Yusen Kaisha, affiliated with the Nippon Yusen Kaisha, operates a subsidized regular service between Kobé and Tientsin or Taku during the winter time with Moji as port of call and also the Yokohama-Newchwang (Yingkow)

service with Nagoya as port of call, both under Government subsidy. It also runs a regular service between Hakodaté and Odomari in Karafuto. The N. Y. K., O. S. K. and Harada Kisen Kaisha jointly maintain a Kobé-Tsingtao regular steamer service. The Tsuruga-Vladivostok regular service is operated by the Kita Nippon Kisen Kaisha, which is affiliated with the Osaka Shosen Kaisha. The Kuribayashi Shosen Kaisha, Hokkaido, operates a regular service between Hakodaté and Petropavlovsk in Kamchatka seven times a year during the warm season. Stores and other supplies of daily necessity are carried by ships on the service for Japanese fishermen engaged in Kamchatka fishery. A regular connecting service between Aomori and Muroran is maintained by the Kita Nippon.

Nippon Yusen Kaisha regular liners sailing between Japan and Europe will call on their outward trips at Istanbul and Beirut more than twice every three months, those sailing between the same places will call on their outward and homeward trips at Piraeus more than twice every three months, and those sailing between Japan and the United States will call on their homeward trips at Havana in Cuba once every two months, all under Government subsidy.

Open Ports The open ports in Japan are Yokohama, Kobé, Niigata, Ebisuko, Osaka, Nagasaki, Hakodaté, Shimizu, Takétoyo, Nagoya, Yokkaichi, Uno, Onomichi, Itozaki, Tokuyama, Imaharu, Shimonoseki, Hagi, Moji, Wakamatsu, Hakata, Karatsu, Suminoyé, Kuchinotsu, Miké, Misumi, Kagoshima, Izuhara, Naha, Hamada, Sakai, Miyazu, Tsuruga, Nanao, Fushiki, Funakawa, Aomori, Otaru, Nemuro, Kushiro, Muroran, Otomari and Maoka.

Promotion of Seamen's Welfare

There are two important organizations for the promotion of seamen's welfare. They are subsidized by the Central Government. They are the Seamen's Aid Society of Japan and the Imperial Society of Life-Saving service.

Shipping for 1934

The general condition of Japanese shipping for 1934 showed a favourable tendency. While the condition of the world's shipping, as a whole, might be said to have emerged somewhat from a severe depression, there was no room for doubt that the demand for tonnage still continued at a low ebb, so that its supply was still in a glutted condition. Japanese shipping did not escape this general influence. A Government policy encouraging the construction of better freighters on condition that old ships be scrapped was announced by the Communications Ministry. The Government would grant subsidies for building new ships. The old ships to be scrapped must be aged more than 25 years and must be registered at home, Korea, Formosa or the Kwantung Leased Territory. The ships to be constructed must be freighters of more than 4,000 gross tons each. In pursuance of the policy, applications for building new ships were filed with the Communications Ministry by the Osaka Shosen Kaisha, Setsuyo Shosen Kaisha, Kuribayashi Shosen Kaisha and Dairen Steamship Company through the Ship Improvement Society. The Osaka Shosen decided to build a 6,300-ton freighter with a speed of 18.5 knots. It is to be fitted with Diesel engines and is to be completed in May, 1936, at the Mitsui Tama Shipbuilding Yard.

For building it the Osaka Shosen will scrap two ships. The Setsuyo Kisen decided to build a 6,300-ton ship with a speed of 18.5 knots and powered with Diesel engines. This ship is expected to be completed in July, 1936, and two old ships will be scrapped. The Kuribayashi Shosen will build a 4,200-ton freighter with a speed of 14.5 knots. It is expected to be completed in July, 1936. Two old ships will be scrapped. The Dairen Steamship Co. will build a 5,000-ton ship with a speed of 15 knots. The ship is expected to be completed in June, 1936. Two old ships will be scrapped.

Commencing with April, 1935, a regular steamship service was opened between Niigata and North Korean ports with an annual Government subsidy of ¥20,000. The Japan Sea Steamship Company was founded under joint investment of the North Japan Steamship Company, subsidiary of the Osaka Shosen Kaisha, and the Shimatani Steamship Company. The Korean Government-General also decided to order the Chosen Yusen Kaisha to work the same service with the same amount of subsidy. The Dairen Steamship Company which was looking forward to come in for a share could not attain its object. The new service is destined to assume the leading position of all services in the Japan Sea.

Ship Price Ship price in Japan for 1934 rose considerably over the previous year. They were from 20 to 50 per cent. higher than in 1933. This was due to high prices of iron and steel and the scrapping of many old vessels due to the encouragement of the construction of superior Diesel-engined cargo boats by the Communications Ministry. Ship sale prices in 1934 were:

	New Ships	Secondhand Ships	Old Ships
	(In yen per ton)		
Large	170	85	60
Medium-sized	180	90	60
Small	200	100	80

Charter of Foreign Vessels As the price of scrap iron in Japan reached ¥50 a ton, ships imported into Japan in 1934 totalled 30 vessels with a total tonnage of 150,000 tons, a drop of 7 vessels and 125,000 tons from 1933. Ships scrapped in Japan in 1934 numbered 21, having an aggregate tonnage of 96,000 tons and representing a decrease of 13 vessels of 50,000 tons from 1933. Foreign ships chartered by shipowners at the end of 1934 totalled 380,000 tons, a peak of recent charters. Most of these ships were from China, Norway and England. Partly due to the short period and partly to the high charterage offered by the Japanese, foreign shipowners were inclined to charter their vessels to Japanese. The average charter rates in Japan, compared with 1933, were:

Size of Ships	Charter rates (in yen per ton) for 1934		Rates year before	
	Highest	Lowest	Highest	Lowest
2,000 tons	4.50	2.90	3.80	2.30
3,000 tons	3.80	2.40	3.25	1.85
5,000 tons	3.50	2.20	2.75	1.60
8,000 tons	2.70	1.80	2.25	1.60
9,000 tons	2.40	1.80	2.20	1.50

The Japanese Government has prohibited importation of foreign ships since May, 1933, except to replace those to be scrapped, and, because of this, chartering foreign ships becomes inevitable. The Government feared that reckless chartering of foreign ships would lead to activities of foreign ships in the Oriental waters, which would eventually hinder the progress of Japanese shipping. The Japan Shipowners' Association also entertained the same fear. But some Japanese shipping concerns did

not share the fear. They contended that unless foreign ships were chartered, foreign shipowners would turn their attention to the Oriental waters as a prospective field of exploitation.

Building Programme The most noteworthy decision in the country's shipping circles for 1935 was adoption of a large scale plan providing for the construction of superior passenger boats by the Nippon Yusen Kaisha for its regular Orient-European line. The company's Yokohama-London regular passenger service is operated by 10 ships once every two weeks in competition with British, French, German, Italian and American ships. Four of these 10 ships, the Suwa Maru, the Fushimi Maru, the Katori Maru and the Kashima Maru are already more than 20 years old, and the company has fully realized their building costs. It takes about ¥8,000,000 to build a 10,000-ton passenger boat, since the building cost today is ¥800 a ton. The N. Y. K. has been working the service with these old ships in the face of various disadvantages and, feeling the need of overcoming the recently growing competition, the company decided to build new ships. The company was prompted by the expansion announcements of various foreign companies, which intended to construct new passenger boats for this service. The Norddeutscher Lloyd is planning to build two passenger ships each of 18,000 gross tons, with a speed of 20 knots per hour. These ships will be placed on the Far Eastern Service in co-operation with the Hamburg-Amerika Line. Lloyd Tiriest of Italy placed two superior passenger boats each of 18,000 tons on the new service. The air route between Europe and the Far East made considerable development within recent years. A regular air service between London and Singapore covers the whole distance in eight

days, while the N. Y. K. service takes 28 days. The need of building faster passenger boats is keenly felt. Nippon Yusen entered into a contract with the Cunard Line for trans-Pacific, Far East and European passenger services.

The Yamashita Steamship Company changed its business policy of drawing profit by chartering ships to operation of freight lines at its own risk and expense. As the result, it caused its sister institution, the Manchoukuo Sea and Land Transportation Company to buy four ships weighing 30,000 tons from the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the Fuso Steamship Company. It has also contracted to buy the Heijun Maru, 6,669 tons, and the Heian Maru, 6,694 tons, from the Industrial Bank of Japan, which foreclosed them in default of loans to the Nippon Steamship Company. The Industrial Bank has also decided to sell two other freighters, the Yoko Maru, 10,000 tons, and the Heimei Maru, 6,500 tons, to the Tochigi Trading Company. Formerly these ships were owned by the Nippon Steamship

Company, but were taken over by the bank in 1925 upon the dissolution of the Nippon Steamship Company. Under the joint investment of Nippon Steamship, the bank established the Nippon Kyodo Steamship Company. By the sales of these four ships, Kyodo Steamship was cleared of all its ships. The total sales price was ¥1,700,000.

Nanyo Kaiun Kaisha Established A new steamship company jointly owned by the four Japanese companies, Nippon Yusen, Osaka Shosen, Ishihara Industry and Nanyo Yusen, which are interested in the Dutch East Indian service, was initiated at a Communications Ministry conference on June 22, 1935. The name of the new company is called the Nanyo Kaiun Kaisha and its capital amounts to ¥10,000,000. The company will take over the business interests on the Java services of the four concerns and will compete with the Java-China-Japan Line. The company will navigate 14 vessels, of which 12 vessels belong to the four companies, and 2 vessels are chartered ships.

PRINCIPAL SHIPOWNERS

Shipowners	Location of head office	No. of ships	Tonnage
Nippon Yusen Kaisha, Ltd.	Maruno-uchi, Kojimachi-ku, Tokyo	98	718,281
Osaka Shosen	Sozomachi, Kita-ku, Osaka	103	505,770
Kokusai Kisen	Marunouchi, Kojimachi-ku, Tokyo	27	149,851
Kinkai Yusen	Marunouchi,	44	129,279
Mitsui Bussan	Muromachi, Nihonbashi-ku, Tokyo	31	111,253
Kawasaki Kisen	Kaigandori, Kobe-ku, Kobe	19	70,198
Toyo	Marunouchi, Kojimachi-ku, Tokyo	11	64,775
Kawasaki Dockyard Co., Ltd.	Kawasakimachi, Kobe-ku, Kobe	11	64,692
Ishihara Gomei Kaisha,	Nishiura-machi, Kichijo-in, Shimokyo-ku, Kyoto	12	63,950
Tatsuma Steamship Co., Ltd.	Honmachi, Nishinomiya, Hyogo-prefecture	15	62,484
Nihon Godo Kisen Kaisha, Ltd.	Marunouchi, Kojimachi-ku, Tokyo	18	62,303
Nishin Kisen Kaisha, Ltd.	"	20	47,711
Railway Department	"	14	41,776
Kita Nippon Kisen Kaisha, Ltd.	Odomari-machi, Odomari-gun, Saghalien Island	19	40,157
Yamashita Kisen Kaisha, Ltd.	Sakaemachi, Kobe-ku, Kobe	9	39,441
Kokai Trading Co., Ltd.	Enoko-Higashino-machi, Nishi-ku, Osaka	8	36,236
Nippon Tanker Co., Ltd.	Marunouchi, Kojimachi-ku, Tokyo	5	34,331

Shipowners	Location of head office	No. of ships	Tonnage
Kyoritsu Kisen Kaisha, Ltd.	Muromachi, Nihonbashi-ku, Tokyo	12	34,331
Kishimoto " " "	Minami-Horie-dori, Nishi-ku, Osaka	6	34,300
Karafuto " " "	Tomarioru-machi, Tomarioru-gun, Sagha- lien Island	7	33,916
Mitsubishi Trading Co., Ltd.	Marunouchi, Kojimachi-ku, Tokyo	5	33,026
Shimatani Kisen Kaisha, Ltd.	Msemachi, Kobe-ku, Kobe	8	32,038
Kuribayashi Trading Co. Ltd.	Kaigancho, Muroran	11	29,726
Shimomura Kisen Kaisha, Ltd.	Sozecho, Kita-ku, Osaka	4	23,055
Kokura Petroleum Co. Ltd.	Kofuncho, Nihonbashi-ku, Tokyo	3	21,931
Meiji Kaiun Kaisha, Ltd.	Akashicho, Kobé-ku, Kobé	6	21,874
Matsuo Kisen Kaisha, Ltd.	Seidomura, Mukogori, Hyogo prefecture	5	21,676
Hachima Kisen Kaisha, Ltd.	Sekizaicho, Nishinomiya, Hyogo prefecture	4	20,279
Nihon Kyodo Kisen Kaisha, Ltd.	Marunouchi, Kojimachi-ku, Tokyo	4	20,245
Others and total		872	3,471,072

LIST OF LARGE N. Y. K. BOATS

Gross tonnage	Passenger accommodation			Steerage
	1st class	2nd class	3rd class	
M.S. Asama	17,000	207	80	500
M.S. Tatsuta	17,000	207	80	500
M.S. Chichibu	17,500	207	80	500
M.S. Terukuni	12,000	125	69	60
M.S. Yasukuni	12,000	125	69	60
M.S. Heian	11,616	Cabin class	82	Tourist
M.S. Hikawa	11,622	"	82	"
M.S. Hiyé	11,622	"	82	"
M.S. Heiyo	10,000	Tourist cabin	84	3rd class
S.S. Taiyo	14,458	308	221	426
S.S. Tenyo	13,402	195	84	508
S.S. Shinyo	13,027	141	82	508
S.S. Korea	11,810	151	41	432
S.S. Siberia	11,790	143	41	432
S.S. Fushimi	10,936	132	59	54
S.S. Suwa	10,672	116	55	54
S.S. Haruna	10,421	116	55	58
S.S. Hakoné	10,421	116	55	58
S.S. Hakozaki	10,413	116	55	58
S.S. Hakusan	10,380	116	55	102
S.S. Kashima	9,908	122	52	64
S.S. Katori	9,849	120	52	64
S.S. Rakuyo	9,419	42	51	563
S.S. Anyo	9,257	32	62	596
S.S. Bokuyo	8,619	37	53	448
S.S. Ginyo	8,613	37	38	456

LIST OF LARGE O. S. K. BOATS

Name of S.S.	Gross tonnage	Nominal horse power	Year constructed
S.S. Arizona	9,633	5,500	1920
M.S. Rio de Janeiro	9,626	5,000	1929
S.S. Buenos Aires	9,625	5,000	"
S.S. Manila	9,486	5,600	1915
S.S. Arabia	9,480	5,500	1917
S.S. Africa	9,475	5,500	"
S.S. Hawaii	9,469	4,800	1915
S.S. Horai	9,205	7,400	1912
S.S. Mizuho	8,511	6,400	"
S.S. Fuso	8,188	6,100	1909
M.S. Takachiho	8,154	7,100	1933

Statistics of Japanese ships, prepared by the Ministry of Communications follow:

SHIPS REGISTERED

(On September 30, 1934)

Tonnage	Japan Proper		Korea		Formosa		Kwantung		Total	
	Nos.	Gross tons	Nos.	Gross tons	Nos.	Gross tons	Nos.	Gross tons	Nos.	Gross tons
20- 100	1,727	74,979	208	8,787	125	5,304	26	1,235	2,086	90,305
100- 500	560	129,732	21	4,093	13	2,865	18	4,579	612	141,269
500- 1,000	197	148,255	4	3,046	2	1,200	4	3,086	207	155,677
1,000- 3,000	349	649,981	20	83,893	—	—	20	37,628	389	721,502
3,000- 6,000	337	1,510,844	1	3,204	—	—	42	190,230	380	1,704,278
6,000-10,000	134	1,001,274	—	—	—	—	6	40,435	140	1,041,709
over 10,000	19	234,596	—	—	—	—	—	—	19	234,596
Total	3,323	3,749,661	254	53,023	140	9,459	116	277,193	3,833	4,089,336

Sailing Ships

20- 100	13,181	596,256	817	26,635	48	2,482	191	8,102	14,237	633,475
100- 500	1,852	264,574	4	650	4	577	1	149	1,861	265,950
500- 1,000	3	1,720	—	—	—	—	—	—	3	1,720
over 1,000	4	9,507	—	—	—	—	—	—	4	9,507
Total	15,040	872,057	821	27,285	52	3,059	192	8,251	16,105	910,652

Other Sailing Ships Measured In Koku

(10 koku counted as one ton)

200-500	226	68,527	—	—	—	—	—	—	226	68,527
500-100	7	4,647	—	—	—	—	—	—	7	4,647
Total	233	73,174	—	—	—	—	—	—	233	73,174
Grand total	18,596	4,629,035	1,075	80,308	192	12,518	308	285,444	20,171	5,007,300

REGISTERED SHIPS IN JAPAN PROPER

(Since 1870)

End of	Steamers		Sailing Ships		Other sailing ships measured in koku		Total	
	Nos.	Gross tons	Nos.	Gross tons	Nos.	Gross tons	Nos.	Gross tons
1870	35	24,997	11	2,611	—	—	46	27,608
1882	198	64,313	399	51,684	—	—	597	115,997
1887	252	107,808	342	46,320	—	—	594	154,128
1892	375	157,147	239	34,163	—	—	614	191,310
1897	626	426,624	171	27,412	—	—	797	454,036
1902	1,033	605,122	3,591	329,839	1,260	548,422	5,884	989,803
1907	1,574	1,109,444	4,210	357,275	1,168	442,399	6,952	1,510,959
1912	1,981	1,430,329	6,443	441,039	1,671	554,834	10,095	1,926,851
1916	2,159	1,696,631	9,314	585,593	1,171	380,116	12,644	2,320,236
1921	2,955	3,167,737	14,280	960,947	830	264,419	18,065	4,155,126
1926	3,246	3,607,038	14,184	873,468	564	177,073	17,994	4,498,213
1930	3,351	3,907,908	15,330	896,272	367	117,041	19,098	4,815,884
1932	3,308	3,874,619	15,038	867,658	308	97,060	18,654	4,752,283
1933	3,295	3,780,197	14,981	862,846	275	87,041	18,551	4,651,747
1934 (Sept.)	3,323	3,749,661	15,041	872,057	233	73,174	18,596	4,629,035

SHIPBUILDING YARDS

Private shipbuilding yards capable of building a ship more than 50 tons (end of 1933)	
Under private management	487
Under corporation management	67
Other shipyards	5
Total	559

SHIPS LAUNCHED DURING 1933:

(Ships smaller than 100 tons omitted)

Steamers	Number	39
	Tonnage	75,907
Sailing Ships	Number	25
	Tonnage	3,913
Total	Number	67
	Tonnage	79,820

SHIPS BUILT AT PRIVATE YARDS

	Steamers Built		Sailing Ships Built	
	Nos. of Private yards	No. Gross tons	No.	Gross tons
1907	81	113	66	4,891
1908	186	73	165	13,013
1907	224	76	220	16,841
1912	228	168	372	23,809
1916	219	94	519	45,831
1920	352	69	12	1,711
1926	324	27	5	560
1930	430	49	11	5,840
1932	531	46	20	2,679
1933	559	39	28	3,913

For 1934 the total number of ships built and their tonnage already reached 139 and 129,656 respectively in the ten months from January to October.

HOLDERS OF CERTIFICATE OF COMPETENCY AS MARINERS

End of	Japanese	Foreigners	Total
1882	1,901	325	2,226
1887	2,737	532	3,269
1892	3,804	718	4,522
1897	7,044	938	7,982
1902	15,977	333	16,310
1907	20,750	352	21,102
1912	26,139	351	26,490
1916	33,976	351	34,327
1921	45,775	349	46,124
1926	60,154	132	60,286
1930	76,787	132	76,919
1932	89,177	132	89,309
1933	92,751	132	92,883
1934 (June)	94,203	132	94,335

HOLDERS OF MARINERS' SERVICE BOOK

End of	Japanese	Foreigners	Total
1902	79,753	774	80,527
1907	164,293	1,109	165,402
1912	206,806	1,889	208,695
1916	254,597	2,853	256,950
1921	357,174	5,000	362,174
1926	—	—	446,900
1930	212,917	4,823	217,740
1932	233,910	5,098	239,008
1933	175,251	2,877	178,128
1934 (June)	180,666	2,885	183,551

Government Subsidy The Government subsidy for the 1935-36 fiscal year, which was adopted at the last Diet session, amounted to ¥9,682,821, representing a drop of ¥312,943 from the preceding fiscal year. The subsidy involves ¥2,997,547 for the San Francisco Line; ¥1,413,744 for the Seattle Line; ¥1,202,200 for the South American East Coast Line; ¥348,246 for the South American West Coast Line; ¥300,000 for the African Line; ¥720,000 for the European Mail Service; ¥160,000 for the South American Line; ¥716,000 for the China Coast Line; ¥50,000 for the Dairen Line; ¥300,000 for the Shanghai Line; ¥100,000 for the North China Line; ¥12,000 for the Tsingtao Line; ¥22,000 for the Japan Sea Line; ¥20,000 for the Petro-pavlovsk Line; ¥10,000 for the Honshu-Hokkaido Connection Line; ¥20,000 for the Naha Line; ¥214,000 for the Hokkaido Line; and ¥20,000 for the Niigata-North Korea Line.

DISPOSITION OF JAPANESE TRAMP SHIPS

(Prepared by Nippon Kaiun Shukaisho)

(In 1,000 tons gross)

Services	Dec. 1, 1934	Feb. 1, 1935
European	309.1	234.1
North American		
Atlantic	306.2	239.1
Japan-North American Pacific	370.4	413.3
Australia and Indian	251.8	350.2
South Seas and Straits Settlements	470.5	599.0

Nearseas	1,392.7	1,191.3
In dock	131.7	143.2
Tied-up ships	—	24.6
Others	14.5	34.2
Total	3,247.2	3,230.5

Freighters Japanese freighters are concentrating their energy on the exploitation of Far East-New York cargo service. At the end of 1934 there were 42 Japanese freighters (six Nippon Yusen Kaisha, eight Osaka Shosen Kaisha, four Kokusai Kisen Kaisha, 13 Mitsui Bussan Kaisha and 12 Kawasaki Steamship Company ships) working the same service. This year the number is expected to increase to 55. This large

fleet of Japanese freighters are in contrast to 15 freighters belonging to three foreign steamship companies on the same service.

Shipping Income on International Trade Net profit realized in connection with shipping on the international trade in 1933 amounted to ¥120,062,000, showing an increase of ¥26,361,000 over the previous year, according to the Finance Ministry. The income for the year amounted to ¥227,930,000 against the expenses totalling ¥101,868,000. The following table gives Japan's invisible exports and income in connection with shipping for 5 years:

RECEIPTS IN CONNECTION WITH SHIPPING ON THE INVISIBLE TRADE OF JAPAN

(in ¥1,000)

	Total Amount of Invisible Exports (Receipts)	Receipts in Connection with Shipping	Excess of Exports(+) or Imports(-) of Invisible Trade	Excess of Receipts over Payments in connection with Shipping
1929	976,371	238,534	+ 94,829	159,175
1930	955,591	194,429	- 14,903	-125,335
1931	886,338	166,911	-149,044	100,641
1932	771,653	181,843	+ 2,000	99,701
1933	958,323	227,930	+ 66,233	126,062

CHAPTER XXVII

JUSTICE AND POLICE

Judicature

The Judicature's Position

Since the promulgation of the Japanese Constitution in 1889, the right of the sovereignty of the Emperor has been divided into three distinct departments, viz., legislation, judicature and administration.

In accordance with Article 57 of the Constitution, "the Judicature shall be exercised by the Courts of Law according to law, in the name of the Emperor." Judges are appointed from among those possessing such qualifications as are determined by law and they are guaranteed by the Constitution against being deprived of their positions unless by way of criminal sentence or disciplinary punishment. Not only are the judges guaranteed their positions, but they have authority, in exercising judicial power, to judge on their own independent views, using the statutes as the sole standard of judgment, without being in any way swayed by interference from others and unaffected by authority arising from any quarter.

Since the judges are entirely independent of the administration, the results of judicial decisions are equally independent thereof, and the decisions are not affected by the administrative power except in cases of pardon or provisional release.

Composition of the Courts

In Japan, the ordinary Courts of Law for the adjudication of civil and criminal cases consist of (1) District Courts (Ku-Saibansho), (2)

Local Courts (Chiho-Saibansho), (3) Courts of Appeal (Koso-in), and (4) the Supreme Court (Taishin-in). The District Courts, the Courts of Appeal and the Supreme Court are all collegiate courts with special divisions, in each of which sit a number of judges.

District Courts The District Courts are presided over by single judges. A three instance system is adopted in the adjudication of all ordinary cases, and any one may lodge an appeal against a judgment rendered in the first instance and demand revision of that rendered in the second instance.

In the matter of civil cases, the District Courts possess judicial power to adjudicate on the following matters in the first instance :

1. Demands for money less than 1,000 yen or for articles, the value of which is less than 1,000 yen.

2. The following cases irrespective of value :

(a) Legal actions brought by lessors against lessees, or vice versa, for the receipt, vacation, use, occupation or repair of houses or other building or parts thereof, or for the seizure of the furniture and fixtures or belongings of lessees by lessors.

(b) Legal actions only concerning the boundaries of real estates.

(c) Legal actions only concerning occupations.

(d) Legal actions brought by employers against employees, or vice versa, for contracts of employment, the terms of which do not exceed one year.

(e) Legal actions brought by travellers against hotel or inn keepers, or vice versa, for matters concerning board or lodging, or by travellers against water or land forwarding agents, or vice versa.

(f) Matters concerning bankruptcy.

In criminal cases, the District Courts, as the courts of law for adjudication in the first instance, possess judicial power concerning the following matters, provided they have not been subjected to preliminary examination :

1. Offences punishable with detention or fine.

2. Offences punishable with penal servitude, imprisonment for fixed terms or by imposition of fines, except those punishable with penal servitude or imprisonment for more than one year.

Local Courts In civil cases, the Local Courts possess judicial power concerning the following matters :

1. In the first instance :

Demands other than those falling under the jurisdiction of the District Courts or of the Courts of Appeal.

2. In the second instance :

(a) Appeals lodged against judgments rendered by the District Courts ;

(b) Demands determined by law for revision of decisions or orders rendered by the District Courts.

Further, with reference to criminal cases, the Local Courts possess judicial power concerning the following matters :

1. In the first instance :

Criminal cases falling neither under the jurisdiction of the District Courts nor under the special jurisdiction of the Supreme Court.

2. In the second instance :

(a) Appeals lodged against judgments rendered by the District Courts ;

(b) Complaints determined by law against decisions or orders rendered by the District Courts, except those falling under the jurisdiction of the Supreme Court.

Courts of Appeal The Courts of Appeal possess judicial power concerning the following matters :

1. Appeals lodged against judgments rendered in the first instance by the Local Courts.

2. Complaints determined by law against decisions or orders rendered in the first instance by the Local Courts, except those falling under the jurisdiction of the Supreme Court.

Powers to adjudicate in the first and second instances in civil cases brought against the members of the Imperial Family belong to the Tokyo Court of Appeal.

The Supreme Court The Supreme Court (Taishin-in) is the highest court of law and possesses judicial power concerning the following matters :

1. In the final instance :

(a) Appeals against judgments rendered by the lower courts ;

(b) Complaints determined by law against decisions or orders rendered in the second instance by the Local Courts or by the Courts of Appeal ;

(c) Complaints against decisions to reject appeals made by the District or Local Courts.

2. In the first, and at the same time, final instance : Preliminary examination and adjudication of offences against the Imperial House, offences of internal disturbance, and offences committed by members of the Imperial Family, for which punishment heavier than imprisonment should be imposed.

Public Procurators

A public procurator's office, with the necessary number of procura-

tors, is attached to each court. The work of the public procurator is, in accordance with the code of criminal procedure, to take legal actions, to go on with necessary legal proceedings, to demand a right application of the law, and to observe the right execution of a judgment. According to the code of civil procedure, he has also rights to ask for a report whenever he thinks it necessary and present his opinions to the court on it, and as a representative of public welfare he carries out his supervising business as laid down by the law in all judicial and administrative matters related to the court. But the public procurator acts absolutely independently of the court.

Court Officials and Procurators

Qualifications Candidates for the office of judge or procurator are chosen by the Minister of Justice from among those who have passed the higher judicial service examination. The selected candidates then have to serve a term of over one and a half years of probation in the courts or in a public procurator's office and pass a further examination, after which, should the report on their estimated ability be favourable, they will receive an appointment as judge or procurator. But those who have been professors of law in the Imperial Universities or lawyers of over three years standing can be appointed as judges or public procurators without examination and estimation.

The following are not to be appointed as either judges or public procurators.

(1) Those who have been convicted of a grave crime, with the exception of those political offenders who have been rehabilitated.

(2) Those who have served sentences on minor offences.

(3) Those who have been adjudicated bankrupt and could not be exempted from the responsibility.

Position of Judges and Public Procurators Judges are permanent officials appointed by His Majesty directly, or by His Majesty's order indirectly, or by His Majesty's approval, according to the grade of their position. Unless by way of criminal sentence or disciplinary punishment judges are not to be moved to another post or place, be suspended from office, be deprived of position, or receive a reduction of salary, without their consent, except in so far as the Minister of Justice may order retirement from service by the decision of a general meeting of the Court of Appeal or the Supreme Court on account of disability caused through weakness of body or mind.

The retiring age is for the President of the Supreme Court 65 years, and for other judges 63 years.

The public procurators are appointed by His Majesty directly or by His Majesty's order indirectly or by His Majesty's approval. Unless by way of criminal sentence or disciplinary punishment the public procurators are not to be deprived of their positions against their own will.

The Procurator-General at the age of 65 years and all other public procurators at 63 years of age must retire from service. A public procurator must obey the orders of higher authorities and judicial policemen must obey the orders issued by the public procurators or through them within the district of jurisdiction of the public procurator's office.

The Jury System

In 1923 the Jury Law was issued, and Japan finally adopted the jury system under which persons other than judges are allowed to take part

in criminal trials. The jury system is used in such criminal cases as where the punishment may be capital, or penal servitude or imprisonment for life. Other criminal cases in which the sentence may be penal servitude or imprisonment for a term longer than 3 years are tried by jury only upon demand of the accused and when they come within the jurisdiction of the Local Courts. The following cases are not submitted to trial by jury:

(1) Offences which come under the special authority of the Supreme Court.

(2) Offences against the Imperial House, causing an internal disturbance, helping an enemy, disturbing international relations, and sedition.

(3) Violations of the Peace Maintenance Law.

(4) Violations of the Military Secrets Preservation Law, the Army or Navy Criminal Laws or any other offences in connection with military secrets.

(5) Violations of the Public Election Laws.

The accused can refuse to have his case tried by jury or withdraw his own demand to be tried by jury at any time previous to the statement of the case by the public procurator, under which circumstances the case cannot be referred to a jury.

The jury is composed of 12 men. At the trial, the chief judge, after having heard all the evidence for and against the accused, sums up the facts and main points of the case, and charges the jury to deliberate and render its verdict by a majority vote. The verdict must be a simple statement as to guilt or otherwise. If the court considers the verdict improper the case may be referred to another jury at any stage of the trial.

In a case where sentence has been passed on a jury's verdict of guilt,

no appeal can be made to the Court of Appeal, but a demand for revision may be presented to the Supreme Court.

Penal System

History It was in the time of the Emperor Suiko, 620 A.D., that the first written Penal Code was issued in Japan. The code was very simple, but later the Chinese penal code, the "To", was introduced and the Japanese code was drafted in a more systematic manner and promulgated by the Emperor Mommu, in 702, as the "Taiho Ritsu-Ryo." Five kinds of punishment were mentioned, namely, flogging, whipping, penal servitude, exile, and death, but in most cases these could be varied to confiscation of property or payment of a fine. Grave crimes were treason, atrocities, blasphemy, undutifulness to one's parents, adultery, etc. Confession of the accused was required as a necessary procedure of a criminal suit, and naturally torture was recognized as an indispensable means of obtaining such a confession. Several hundred years after the issuance of the Taiho Ritsu-Ryo the Shogunate Governments adopted extremely terroristic penal systems with the purpose of preventing the occurrence of criminal cases. One of the most important of them was the One Hundred Criminal Regulations of the Tokugawa Shogunate. It was a secret criminal code which was not published and was accessible to the judges only, an expression of the despotism of the ruling class that had as its motto, "leave the people ignorant of the niceties of law."

With the downfall of the Tokugawa Shogunate the Great Emperor Meiji abolished the system of intimidation and reformed the old penal code. The codification of Civil Law was carried on under the advice

of Monsieur Gustave Boissonade, a French scholar of jurisprudence who had been invited to Japan for that purpose. A new Penal Code and Criminal Procedure Law, the characteristics of which were that, though the lawful punishment of criminals is assured, the penalties are tempered with sympathy toward the accused and are in no ways severe, were enacted and promulgated. "No crime shall be punished unless there is a regulation in the law," (*nullum crimen et nulla poena sine lege*), is one of the guiding principles of the code, which was formulated on the French penal code of 1810. Within a few years it was found that the new code was out of date and various amendments were discussed from 1884 to 1907, in which year a thorough revision was made and the present Penal Code issued. Since then the social conditions of the people have undergone rapid changes, more advanced theories regarding penalties have been gaining ground and so many defects have been noticed in the present code, that in 1926 the Extraordinary Legislative Committee passed a resolution that the Penal Code should be revised. A special investigation

committee set to work and in 1931 an outline and draft of a revised penal code and prison law was drawn up. It is expected that the thorough study of the draft that is now going on will soon be completed.

Penalties Penalties are divided into six kinds, namely, the death penalty, penal servitude, imprisonment, monetary penalties, custody, and fines. Confiscation is recognized as an additional punishment. The death penalty is by hanging and is carried out in prison. Penal servitude and imprisonment are for limited terms and for life; limited terms extend from one month to 15 years. Under penal servitude labour is compulsory, but a prisoner serving a term of imprisonment is not compelled to work, though he may be allowed to do so at his own request. A monetary penalty is 20 yen and above, unless made lighter on decision. Custody is from one to under 30 days, and a fine is from 10 sen to less than 20 yen. Those who cannot pay monetary penalties and fines are kept in workhouses as an alternative.

The classified number of penalties imposed during the five years 1929-1933 follows:

Year	Death Penalty	Penal Servitude		Imprisonment		Detention	Total
		for life	for a term	for life	for a term		
1929	13	38	23,982	—	134	5,237	29,354
1930	15	43	27,007	—	360	5,765	33,190
1931	19	38	28,065	—	316	5,500	33,938
1932	22	57	31,339	—	378	4,491	36,287
1933	28	61	34,493	—	440	4,458	39,480
Average for 5 years	19	47	28,963	—	325	5,090	34,450

Suspension of Sentence and Provisional Release The present penal law allows probation. The execution of a penalty often leads to self-abandonment and turns comparatively harmless people, who are not yet addicted to criminal deeds, into habi-

tual jail-birds. This is found to be especially so when the penalty is one of penal servitude for a short time, and it is, therefore, far better for people convicted of light and incidental offences to be excused from the real infliction of the penalty

under special conditions and to be given proper admonitions in order to make them repentant by self-examination. Consequently, the Japanese courts are empowered, under certain conditions, to postpone the execution of sentence for from one to five years, beginning with the day of the sentence and according to the nature and condition of the case, on persons sentenced to penal servitude or imprisonment for less than 2 years.

Probation is cancelled (1) when the probationer, during the time of probation, commits another offence and is sentenced to imprisonment or is given a heavier sentence, (2) when the probationer is sentenced to imprisonment or a heavier penalty is imposed because of some other crime committed before the granting of probation, and (3) when, in cases not mentioned above, the probationer is found to have had at some previous time a sentence of imprisonment or some other heavier penalty inflicted on him. Should the term of probation expire without being revoked the sentence is automatically cancelled thereby. The draft of the penal code of 1931, besides confirming the system of probation, admits the principle of postponement of passing sentence in specially pitiable cases of a non-serious nature.

Release on parole was practised as early as 1790 in the House of Correction at Ishikawajima, Yedo; the present law admits it and it is widely practised. As reformation is one of the chief aims of punishment, when convicts are evidently repentant and there is no fear of their committing further crimes, it is unnecessary to continue the punishment. Therefore, it is stated in the present Penal Code, "when the convicts who are under penal servitude or imprisonment are found to be

evidently repentant, provisional release may be authorized by the administrative office after they have finished one-third of the limited term or ten years of the term for life" (Article 28).

Provisional release may be cancelled (1) when the persons on parole have committed another offence during the term of the release and have been sentenced to a monetary or heavier penalty, or (2) when they are sentenced to a monetary or heavier penalty because of some other offence committed before the provisional release, or (3) when they were sentenced to a monetary or heavier penalty because of another offence committed before the provisional release and that penalty must now be fulfilled, or (4) when they break the provisional release rules. In this case the rest of the term of sentence must be served.

Juvenile Criminals Article 27 of the Code of Criminal Procedure says, "public suit may not be instituted when the suit is found unnecessary because of the character of the criminal, his age and environment, the condition of his crime and his behaviour after the incident," and leaves the decision as to whether proceedings should be taken to the public procurator. The existing criminal system of Japan is thus inclined to some extent to subjectivism, putting emphasis on the offender himself rather than on the offence. Its evident expression is found in dealing with young offenders. According to the provisions of the Juvenile Criminal Law, 1922, young boys or girls who are under 18 years of age are called juveniles and their offences are dealt with, not under the penalty system, but by a system of protection. Even when they are punished, the penalty is inflicted in a special way. Protective measures are (1) to give

admonitions, (2) to leave them to the guidance of school principals, (3) to let them solemnly declare their sincere repentance in a written statement, (4) to place them, under certain conditions, in the care of their parents, (5) to place them under the care of temples, churches, protective bodies or other proper persons, (6) to hand them over to the care of the juvenile probation officers, (7) to send them to reformatories, (8) to send them to houses of correction, and (9) to put them under proper treatment in hospitals. These measures may be continued till the juveniles reach the age of 23 years. When juveniles are admitted to probation or provisional release they are not put under police supervision as is the case with the adults, but are left to the care of the juvenile probation officers. For the protective disposition of juvenile offenders juvenile courts have been established.

Special Measures for Juveniles Special measures for the penal punishment of juvenile offenders are:

(1) The death penalty or penal servitude for life is not inflicted upon a person who is under 18 when the crime is committed. When the crime is so grave that the death penalty or penal servitude for life should be passed, the sentence is mitigated to penal servitude or imprisonment for 10-15 years.

(2) When a juvenile criminal should be sentenced to a penal servitude or imprisonment of more than three years at its maximum, the minimum and the maximum limits are fixed within the scope of the penalty to be inflicted on the crime committed. And when he should be sentenced to a penalty of more than 5 years at its minimum, the term is diminished to 5 years. That is to say, in case of a juvenile convict an indeterminate sentence is admitted.

(3) Juveniles sentenced to penal servitude or imprisonment are put in a special jail or in a section of the common prison secluded from adults. If they reach the age of 18 during the term of confinement they may still be kept secluded till they reach the age of 23.

(4) Juveniles sentenced to penal servitude or imprisonment can obtain provisional release (a) after 7 years in case of a life-term sentence, (b) after 3 years in case of (1) above mentioned, (c) after serving one-third of the time in case of (2) above.

(5) Juveniles are not sent to work houses.

Second and Habitual Offenders

In case of those who repeat criminal deeds and commit other offences, especially in the case of professional and habitual offenders, it is necessary to put them into confinement for considerable lengths of time in order to give them time to reform their character and at the same time protect society at large from their depravations. To deal with these people Japanese criminal law provides a system of aggravating penalties for the recidivists and admits special dealing with habitual thieves as a complementary system.

Repetitious Offenders (Art. 56-59, Penal Code) When a person commits another crime and is sentenced to limited penal servitude within five years from the day of release from former penal servitude or from remission of execution of a penalty, he is classified as a second offender. Under the name of repetitious offenders come all second offenders and up. The cases of remission of penal execution are extinction of prescription, special pardon and the case stated in the Penal Code, Art. 5. Amnesty and probation not only

remit penal execution, but also cancel the effect of the penalty altogether, and the crimes concerned cannot be taken as the basis for forming a repetitious offence. Again, when a person commits a crime during a term of probation the offence for which the probation was admitted is not counted as the first offence. The penalty inflicted on a repetitious offender is aggravated.

Habitual Thieves Habitual offenders are most numerous in burglary and larceny cases. The habitual offenders often regard prison as their residence and repeat crimes immediately after their release, to the great harm of the community, in order to get back "home". They have, therefore, to be separated from society by the infliction of comparatively long sentences. In many cases it has been impossible to increase the penalty, or when it has been increased it has still been too short, and as there is no provision in the existing Penal Code for unlimited imprisonment the Thief Prevention Law was enacted in 1930. According to this law, when persons commit burglary or larceny habitually by the use of weapons, or by forming a band of more than two, or stealthily breaking into houses by night, they are punished by being sent to penal servitude for more than 2 years in the case of a thief and more than 7 years in that of a burglar. The draft of the revised penal law of 1931 adopts the system of incarceration for unlimited terms for habitual offenders (draft, Article 91-95).

Peace Preservation

Penalties are imposed as deterrents, but are not always effective, especially in the case of insane people and habitual drunkards, as well as in that of habitual offenders. For that reason it is advisable that,

in addition to meting out punishment for any wrong-doings, it should be possible to segregate such people from law-abiding society. To meet this need, most of the countries of the world have a supplementary system of Peace Preservation Laws, which restricts to a certain extent the freedom of released persons as long as their dangerous character is unimproved. In Japan the existing Penal Code makes no provision for such a system, but the draft of 1931 suggests four kinds of peace preservation regulations, namely, preventive surveillance, curative treatment, compulsory labour, and preventive detention.

Surveillance When persons who are defective in mind or body or are deaf-and-dumb are to be sentenced to imprisonment or some heavier penalty, the Court can decide to place them under surveillance. In case the sentence has already been passed for one reason or other, surveillance will follow the execution of the sentence, but in some cases it may be carried out before the commencement of execution or at any time during its course, (draft, Art. 127). Those who are put under this measure are to be kept in the surveillance house and receive treatment for their defectiveness, while being under surveillance. They may be released when further surveillance is found unnecessary by order of the administrative offices. In principle the time of surveillance is 5 years, but this may be renewed by the Court when thought necessary. When the sentence of penalty and the surveillance disposition are pronounced at the same time, the Court may choose either one of them as either of the two became unnecessary by the enforcement of the other.

Curative Treatment When drunkards or users of narcotics commit

offences while in a state of intoxication or insensibility and it is found necessary to correct them of their bad habits, the Court may order them to be kept in Homes of Correction for a period of 2 years and receive proper curative treatment.

Compulsory Labour When persons who habitually commit crimes because of vagrancy or hatred of labour are to be sentenced, the Court may order compulsory labour together with the regular sentence for a period of 3 years, during which time they are to be kept in compulsory labour houses and compelled to work diligently under strict discipline in order to acquire the good habit of work. The chief official of the labour house may send them to work for the Government or to public or private factories, to farms or other places of labour, allowing them to stay outside the Compulsory Labour Houses, if deemed expedient.

Preventive Detention When the convicts who are to be released at the expiration of a term of penal servitude are found to be addicted to incendiarism or likely to commit murder or burglary, the Court may order them to undergo preventive detention, (draft, Art. 139). They are to be kept in Houses of Prevention and get the treatment necessary for leading them to full repentance. The duration of the treatment is 2 years in principle, but may be prolonged by the Court. This measure is to take effect after the expiration of the regular term of penal servitude, (draft, Art. 140-142).

Criminal Compensation System

A nation has the responsibility of compensating innocent persons who have been wrongfully punished or have been kept in detention during trial. The Criminal Compensation Law was enacted in 1931. Cases to

be compensated according to the Law are as follows:

(1) When a verdict of "not guilty" or an acquittal has been given by the examining judge to a person who has been kept in detention, the State makes compensation for the loss caused by the detention.

(2) In case a verdict of "guilty" is reversed by a higher court and the accused has already suffered the execution of the penalty or was kept in detention before the execution, the State makes compensation for the loss caused by the penalty or detention.

When the accused is dead, the bereaved get the compensation. The bereaved in the terms of the Law are meant to be the spouse, children, grandchildren, parents, grandparents and those whose names were in the same census registration at the time of the death of the accused.

As compensation for unlawful arrest or detention, a sum of less than 5 yen is paid against the warrant of arrest or for each day of detention after the arrest or for each day of detention after the execution of the warrant of detention.

As compensation for penal servitude, imprisonment, or detention, a sum of less than 5 yen is paid for each day of the whole period. The same rule applies to detention before the execution of the death penalty.

As compensation to the bereaved of a person who has mistakenly suffered the death penalty, a sum of money considered reasonable by the Court is given in addition to the compensation for detention.

As compensation for a monetary penalty or fine wrongly imposed, the amount of money corresponding to that of the monetary penalty or fine already paid is given back. In case a person was unable to pay the amount imposed and in lieu was kept

in a labour house a sum of 5 yen for each day of detention is paid as compensation.

Claims for compensation should be made to the Court returning the verdict of "not guilty" or to the Court in which the examining judge

pronounced the acquittal.

Statistics

In the following there are attached a number of statistics relevant to the judicature of the country for reference:

I NUMBER OF COURTS (Oct. 1, 1934)

Supreme Court	Courts of Appeal	Local Courts	Branch Courts	District Courts	Branch Offices
1	Tokyo	11	17	64	413
	Osaka	9	12	43	277
	Nagoya	6	9	30	203
	Hiroshima	6	13	36	252
	Nagasaki	8	17	53	284
	Miyagi	6	16	36	228
	Sapporo	5	3	20	96
Total	1	7	51	87	282
					1,753

II CLASSIFIED NUMBER OF CASES INVESTIGATED BY THE PUBLIC PROCURATORS (1933)

Name of Offence	Number of cases new	old	Persons examined	Prosecutions cases	persons
Criminal Code Offences					
Against the Imperial House	37	10	67	10	12
Against the execution of official duties	1,048	38	37	227	316
Escaping from prison, etc.	30	—	33	14	14
Giving shelter to a criminal or destroying evidence	116	1	217	21	32
Sedition	3	2	330	1	47
Fires through incendiarism or negligence	13,881	114	14,897	2,828	2,979
Inundating and interfering with irrigation	196	3	485	6	11
Interfering with traffic	858	19	1,183	124	151
House-breaking	4,747	60	6,117	1,300	1,415
Disclosing a secret of another person	44	—	50	5	5
Disclosing national secret	1	—	8	—	—
Opium smoking	16	3	45	12	21
Polluting drinking water	61	—	74	15	19
Forgery of currency	65	—	106	31	64
Forgery of documents	5,114	333	8,453	675	960
Forgery of negotiable securities	608	57	1,069	160	292
Forgery of seals or stamps	4,079	20	4,224	21	33
Perjury	1,482	167	2,657	83	148
False accusation	1,086	51	1,690	39	42
Obscenity, illicit sexual intercourse and bigamy	3,001	92	4,651	842	1,238
Gambling and lotteries	19,218	98	85,836	12,170	50,390
Disturbing worship, etc.	312	5	510	41	54
Malversation	735	51	2,414	283	799
Murder	2,445	42	2,896	1,132	1,338
Inflicting injury	28,129	256	39,687	8,104	9,759
Inflicting injury by negligence	19,080	317	20,369	5,207	5,350
Criminal abortion	502	18	1,377	96	173
Desertion of children	298	4	389	12	15
Arresting or confining others unlawfully	123	9	303	10	29
Intimidation	1,690	33	2,674	362	402

Name of Offence	Number of cases		Persons examined	Prosecutions	
	new	old		cases	persons
Kidnapping and abduction	1,503	55	2,354	128	166
Defamation	2,371	82	3,440	151	172
Unlawful interference with another man's credit and business	843	53	1,654	42	93
Theft and burglary	122,232	364	136,609	19,910	21,413
Fraud and blackmail	89,431	2,155	119,179	5,782	7,378
Usurpation	48,243	908	55,577	2,379	2,648
Receiving stolen property	4,677	112	5,410	660	830
Destruction and concealment of another man's property	2,336	100	3,699	112	124
Total	380,646	5,662	532,869	62,995	108,928
Offences against Special Laws	121,905	1,142	174,131	45,415	69,565

Name of Offence	Non-prosecutions		Miscellaneous		Total		Not yet decided	
	cases	persons	cases	persons	cases	persons	cases	persons
Criminal Code Offences								
Against the Imperial House	24	31	6	10	40	53	7	14
Against the execution of official duties	729	1,063	92	176	1,039	1,555	47	82
Escaping from prison, etc.	10	11	5	7	24	32	1	1
Giving shelter to a criminal or destroying evidence	84	163	9	15	114	210	3	7
Sedition	2	269	2	23	5	330	—	—
Fires through incendiarism or negligence	10,536	11,232	520	559	13,884	14,770	111	127
Inundating and interfering with irrigation	177	444	11	13	194	468	5	17
Interfering with traffic	464	693	261	305	849	1,149	28	34
House-breaking	3,028	4,049	418	519	4,746	5,963	61	134
Disclosing a secret of another person	36	42	2	2	43	49	1	1
Disclosing national secret	1	8	—	—	1	8	—	—
Opium smoking	2	10	5	14	19	45	—	—
Polluting drinking water	36	47	10	12	61	74	—	—
Forgery of currency	23	23	9	12	63	104	7	2
Forgery of documents	3,551	5,446	881	1,349	5,107	7,755	340	698
Forgery of negotiable securities	351	491	134	245	645	1,028	20	41
Forgery of seals or stamps	3,956	4,056	110	121	4,087	4,210	12	13
Perjury	1,104	1,716	232	377	1,419	2,341	230	416
False accusation	921	1,365	108	158	1,068	1,565	69	125
Obscenity, illicit sexual intercourse and bigamy	1,706	2,553	456	707	3,004	4,498	89	153
Gambling and lotteries	6,204	28,109	861	6,739	19,235	85,238	81	598
Disturbing worship, etc.	200	362	70	77	311	493	6	7
Malversation	356	1,113	90	301	729	2,213	57	201
Murder	1,012	1,118	289	364	2,443	2,820	44	76
Inflicting injury	17,548	25,676	2,485	3,714	28,137	39,149	248	538
Inflicting injury by negligence	11,601	12,247	2,138	2,254	18,946	19,851	451	518
Criminal abortion	354	1,018	53	116	503	1,307	17	70
Desertion of children, etc.	194	259	89	103	295	377	7	12
Arresting or confining others unlawfully	105	214	16	40	131	283	6	20
Intimidation	1,145	1,957	200	254	1,707	2,623	16	51
Kidnapping and abduction	872	1,350	516	748	1,516	2,264	42	90
Defamation	2,028	2,815	156	209	2,335	3,196	118	244
Unlawful interference with another man's credit and business	736	242	105	187	883	1,522	43	132
Theft and burglary	87,119	97,004	15,272	17,680	122,301	136,097	295	512
Fraud and blackmail	61,904	78,861	22,000	29,152	89,686	115,391	1,900	3,788

Name of Offence	Non-prosecutions		Miscellaneous		Total		Not yet decided	
	cases	persons	cases	persons	cases	persons	cases	persons
Usurpation	37,074	41,713	8,904	9,860	48,357	54,221	794	1,356
Receiving stolen property	3,714	4,498	367	490	4,741	5,818	48	92
Destruction and concealment of another man's property	2,076	3,131	184	303	2,372	3,558	64	141
Total	260,974	336,395	57,076	77,225	381,045	522,548	5,263	10,321
Offences against Special Laws	51,994	71,870	24,529	30,508	121,929	171,943	1,118	2,188

III BOYS AND GIRLS DEALT WITH IN JUVENILE COURTS

Year	Number of persons dealt with	Number of persons who finished examination				Total
		Not put on trial	Put under protective disposition	Sent to the public procurator	Sent to other courts	
1929	Boys	12,346	7,752	4,227	2	12,006
	Girls	1,019	573	409	—	983
1930	Boys	12,835	8,328	4,123	3	12,471
	Girls	998	565	405	—	970
1931	Boys	13,141	8,572	4,218	7	12,819
	Girls	1,015	555	429	—	985
1932	Boys	13,402	8,478	4,543	1	13,039
	Girls	1,154	670	441	—	1,112
1933	Boys	15,171	10,841	4,865	—	15,725
	Girls	1,201	716	441	—	1,158

IV NUMBER OF JUVENILES DEALT WITH IN THE HOUSES OF CORRECTION

Year	Number of persons who went out of the House of Correction								
	Persons received	Released	Provisional release	Cancel of decision or its revision	Abscondence	Death	Sent to other house	Misc.	Total
1929	1,224	43	76	666	66	3	—	9	863
1930	1,252	65	82	745	83	1	—	1	977
1931	1,259	71	65	774	52	1	—	3	966
1932	1,172	71	63	730	54	—	2	7	927
1933	1,061	83	22	676	13	1	—	3	798

V NUMBER OF PRISONS (Oct. 1, 1934)

Prisons	Branches	Total
52	103	155

VI YEARLY COMPARISON OF THE NUMBER OF NEW CASES

/ Year	1929	1930	1931	1932	1933	Average for 5 years
Criminal Code Offences						
Theft	12,970	14,807	15,498	17,771	19,259	16,061
Gambling and lotteries	1,514	1,444	1,379	1,144	1,405	1,377
Fraud and usurpation	4,503	5,175	5,441	5,990	6,792	5,580
Forgery of documents, negotiable securities and seals or stamps	417	495	484	500	508	481
Injury	1,342	1,460	1,402	1,561	1,528	1,459
Receiving stolen articles	245	303	350	340	516	351
Murder	413	490	558	666	684	562
Burglary	641	673	651	800	757	704
Incendiarism	416	444	613	772	818	613
Interference with the execution of official duties	82	55	97	83	94	82
Destruction and concealment of another man's property	16	14	11	9	18	14

/ Year	1929	1930	1931	1932	1933	Average for 5 years
Forgery of currency	37	26	31	50	68	42
Abortion	24	26	39	32	30	30
Obscenities, illicit sexual intercourse and bigamy	183	221	204	243	279	226
House-breaking	261	298	248	282	288	275
Perjury	35	37	38	38	46	39
False accusation	12	10	15	15	12	13
Others	366	438	437	442	442	425
Offences against Special Laws						
Criminal law of the army and navy	42	41	28	46	56	43
The forest law	44	40	37	40	37	40
The military service law	9	15	8	9	12	11
The mail and telegraphy law	1	7	7	5	2	4
Others	550	924	858	971	1,368	936
Police laws, and prefectural laws	5,222	5,744	5,504	4,478	4,461	5,082
Total	29,354	33,190	33,938	36,287	39,480	34,450

VII YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS ACCORDING TO THE TERM OF SERVITUDE

/ Year	1929	1930	1931	1932	1933	Average for 5 years
Penal Servitude						
Penal servitude for life	88	43	38	57	61	47
Over 15 years	5	20	52	38	56	34
Less than 15 years	55	57	58	68	53	58
Under 10 years	692	765	760	890	996	821
Under 5 years	1,633	1,764	1,723	2,046	2,309	1,907
" 3 "	2,628	2,719	2,766	3,210	3,685	3,002
" 2 "	5,244	5,560	5,745	6,840	7,479	6,174
" 1 year	8,288	9,894	10,668	12,049	13,111	10,802
" 6 months	3,686	4,390	4,464	4,638	5,033	4,442
" 3 "	1,641	1,838	1,829	1,560	1,771	1,728
Total	23,970	27,050	28,103	31,896	34,554	29,015
Imprisonment						
For life	—	—	—	—	—	—
Over 15 years	—	—	—	—	2	0
Less than 15 years	—	—	—	—	1	0
Under 10 years	—	—	—	—	3	1
Under 5 years	—	—	—	—	11	2
" 3 "	1	—	—	—	1	0
" 2 "	4	5	7	2	1	4
" 1 year	2	11	6	3	5	5
" 6 months	17	28	54	69	48	43
" 3 "	110	316	249	304	368	269
Total	134	360	316	378	440	326
Detention	5,237	5,765	5,500	4,491	4,458	5,090
Death penalty	13	15	19	22	28	19
Total	29,354	33,190	33,938	36,287	39,480	34,450

VIII YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS ACCORDING TO THE NATURE OF CRIMES

	1929		1930		1931	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Theft	5,358	7,612	6,585	8,222	6,771	8,727
Burglary	688	243	455	215	436	207
Gambling and lotteries	963	551	931	513	856	523
Fraud and terrorism	1,750	1,585	2,133	1,734	2,264	1,861
Usurpation	804	364	933	375	974	342
Receiving stolen goods	135	92	216	87	225	125
Forgery of currency	25	12	19	7	21	10

	1929		1930		1931	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Forgery of documents, seals or stamps	330	87	391	104	389	95
Obscenities, illicit sexual intercourse and bigamy	149	34	189	32	167	37
Injury	1,034	307	1,117	341	1,100	302
Murder	375	34	423	55	498	49
Abortion	20	4	23	3	34	5
Sedition	25	7	18	—	19	1
Incendiarism	380	36	423	21	567	46
Others	501	239	569	265	578	248
Offences against special laws	540	101	894	117	826	116
Total	12,796	11,308	15,319	12,091	15,725	12,694
	1932		1933		Average for 5 years	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Theft	7,950	9,821	8,610	10,649	7,055	9,006
Burglary	541	248	519	215	468	226
Gambling and lotteries	721	423	893	512	873	504
Fraud and terrorism	2,669	1,992	2,917	2,231	2,347	1,881
Usurpation	1,001	328	1,203	441	983	370
Receiving stolen goods	229	111	357	159	236	115
Forgery of currency	39	11	62	6	33	9
Forgery of documents, seals or stamps	393	107	388	120	378	103
Obscenities, illicit sexual intercourse and bigamy	196	47	252	27	191	35
Injury	1,231	329	1,178	350	1,132	326
Murder	604	52	606	73	501	53
Abortion	25	7	24	6	25	5
Sedition	39	2	43	3	29	3
Incendiarism	727	45	771	47	574	39
Others	569	258	582	272	560	256
Offences against special laws	917	142	1,332	146	902	124
Total	17,851	13,923	19,737	15,257	16,286	13,055

IX THE NUMBER OF CONVICTS AT THE END OF EACH YEAR

Classes	1929	1930	1931	1932	1933	Average for 5 years
Convicts	36,859	40,595	41,671	45,730	49,272	42,825
{ men	634	593	582	594	650	611
{ women	3,916	4,628	4,611	5,536	5,924	4,923
Accused	103	133	131	165	247	156
{ men	317	472	492	461	514	451
{ women	5	9	13	16	16	12
Detained in the house of labour	5	5	4	2	3	4
{ boys	3	4	3	4	1	3
{ girls	2	1	1	—	—	—
Infants	41,097	45,700	46,778	51,729	55,713	48,203
{ men	745	739	729	779	914	781
{ women	41,842	46,439	47,507	52,508	56,627	48,985
Total	41,842	46,439	47,507	52,508	56,627	48,985
Sum total	41,842	46,439	47,507	52,508	56,627	48,985

X YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS

Classes	1929	1930	1931	1932	1933	Average for 5 years
Convicts	29,344	33,190	33,938	36,287	39,480	34,450
Suspects	16,644	16,864	16,635	17,498	17,560	17,040
Accused	27,995	34,413	33,737	36,533	38,594	35,254
Kept in the house of labour	5,456	7,909	9,658	11,272	10,851	9,029
Infants (a) born in prison	3	2	6	4	7	4
(b) taken in with mother	27	29	26	19	27	26
Total	30	31	32	23	34	30
Sum total	79,469	92,407	94,000	101,613	106,519	94,804

Prison System

Historical Background

A short historical retrospect of our penal system will show that it is only in comparatively modern times that "Imprisonment" became the recognized method for the punishment of crime.

Up till recent times the idea at the root of the Japanese penal system was minatory. In other words, the so-called principle of general prevention by warning the people at large against the commission of crimes by imposing heavy punishments upon criminals was adopted. Accordingly, the punishments were principally capital and corporal and extremely cruel in character. For instance, the Criminal Code of the Yedo Period (1502-1867) recognized the exposing in public of the heads of persons executed; crucifying, burning at the stake and other similar cruel punishments were imposed. In those days the jails were used merely as places of detention for various offenders until their trial, not as places for reforming offenders. Imprisonment was a very unusual form of punishment, for prisons were unknown and imprisonment was not a legal penalty.

Exile and Banishment Punishments which brought loss of liberty for specified periods to the criminal were exile and banishment. Persons punished with exile were sent to distant islands and places such as Satsuma, islands of the Goto group, Okí, Iki and Amakusa, and there they were forced to work under such miserable conditions that most of them died of starvation. Banishment was a penalty designed to expel persons convicted of crimes from certain fixed areas, and, as the result of the enforcement of this punishment in certain districts industries declined

and farms and fields lay waste, giving rise to many social evils such as the increase in the number of ronin (masterless samurai), *mu-shukumono* (vagabonds) and other dangerous elements. In 1778, therefore, as a remedial measure, the Tokugawa Shogunate instituted the system of *kozan-yékifu* (mine labour) and, in 1790, that of *ninsoku-yoseba* (places for the detention of convict-coolies). The system of *kozan-yékifu* dealt with vagabonds with no previous convictions. These were sent as coolies to pump water out of the Sado gold-mine. In and after 1788, those who had been punished with flogging or marked with tattoos as ex-convicts and were homeless or those who, it was feared, might perpetrate crimes in the future were sent there also.

Prototype of Present Prisons The *ninsoku-yoseba* were to all intents and purposes the prototype of present day prisons and penal servitude. These places for the detention of convict-coolies were located at *Ishikawajima* and *Tsukudajima* in Yedo and at *Kamigo-mura*, *Tsukuba-gun*, *Hitachi* province, and there vagabonds and those who had been punished with flogging or marked with tattoos as ex-convicts were detailed to work as oil pressers or at other kinds of labour for a fixed wage, with the ulterior object of giving them such instruction and training as would fit them to lead the lives of respectable members of society. In and after 1820 those who were punished with banishment heavier than that from the confines of Yedo (Tokyo) were put to forced labour for a fixed period of time in lieu of that punishment. Thus the *ninsoku-yoseba*, which had been instituted as workhouses for vagabonds, were turned into prisons for the reclama-

tion of criminals through ordered life and labour. In its correctional idea *ninsoku-yoseba* was entirely identical with the London "Bridewell," which was established in England in 1550 "to punish, correct, and reform by labour of a diversified nature," and the Amsterdam workhouse (*tuchthuis*) founded at the end of the 16th century and well known for its motto, "Schrick niet! ick wreeck geen quaet, maer dwing tot goedt, straf ist myn handt, mar lieflijk myn gemoedt." (Do not fear! I will not take revenge upon you for your misdeed; on the contrary, I wish to lead you to good. Although I am rigorous in handling you, my heart is filled with kindness towards you.) In and after 1790 the prisoners detained in the *ninsoku-yoseba* who behaved well and showed notable signs of penitence were liberated on certain conditions and this may be taken as the enforcement of provisional release of prisoners for the first time in Japan. When it is remembered that the system of provisional release of prisoners in Europe originated in a favoured release of prisoners from a convicts' colony in Australia in 1791, it is an interesting coincidence that the same system was inaugurated simultaneously both in the West and the East.

Improvement of 1872 In 1871, with a view to carrying out a great improvement in our prison system, the Emperor Meiji despatched the Vice-Director of Prisons, Mr. Jinsai Obara, to Hongkong and Singapore to inspect and study the prison systems there, and, as a result, the Prison Regulations, the first written law concerning prisons in Japan, were promulgated in 1872. According to the provisions of these regulations, the reclamation and education of the inmates of prisons should be based on love and benevolence.

At the beginning of the Regulations, it is stated: "Prison is a place for the incarceration of criminals for chastisement. They are placed there because of love and benevolence towards them and not because of any desire to inflict cruelty upon them; prison is intended for chastising them and not for subjecting them to hardships. Punishment is imposed on them because it is unavoidable and because it is a means of removing evil from the State. The authorities of prisons shall conscientiously observe this principle in treating prisoners." The Regulations were framed on a progressive system and on very advanced lines, but subsequently their operation was suspended for a time, and, in 1881, the Revised Prison Regulations were published. The Regulations were again revised in 1889, and, with the revision of the Criminal Code in 1907, the existing Prison Law was enacted that year and published the following year.

Management of Prisons

Prisons are placed under the control of the Minister of Justice. Prior to 1900, they were under the control of the Minister of Home Affairs, but, since that year, they have come under the supervision of the Minister of Justice. With the transfer of affairs relating to prisons from the Department of Home Affairs to the Department of Justice, the Bureau of Prisons was established in the latter Department for the administration of matters concerning the execution of sentences, prisons, provisional releases of prisoners, and the identification of criminals by finger-prints. A Director, several secretaries and a hygiene official of the Department, several clerks and three assistant-experts in finger-prints were appointed to conduct the business of the Bureau.

Today there are 52 ordinary prisons, 3 reformatory prisons for minors, and 103 branch-prisons, and of 1933, was 56,627. (See Table IX, p. 763.)

The kinds and regular number of prison officials are as follows:

Governor (officials of sonin rank)	43
Assistant-governors (officials of sonin rank)	24
Doctors (accorded treatment as officials of sonin rank)	93
Chaplains (accorded treatment as officials of sonin and hannin ranks)	142
Instructors (accorded treatment as officials of hannin rank)	87
Industrial work experts (accorded treatment as officials of sonin rank)	19
Assistant industrial work experts (accorded treatment as officials of hannin rank)	421
Assistant doctors (accorded treatment as officials of hannin rank)	44
Pharmacists (accorded treatment as officials of hannin rank)	10
Chief warders (officials of hannin rank)	478
(including 5 chief wardresses)	
Interpreters (officials of hannin rank)	4
Warders (accorded treatment as officials of hannin rank)	6,669
(including 171 wardresses)	
Workers, miscellaneous	627
Total	8,622

Prison superintendents are appointed from among officials ranking as governors and assistant-governors by the Minister of Justice, and branch-prison governors from among assistant-governors and chief warders.

Classification

In the Japanese prison system there are four kinds of prisons: (1) prisons for those sentenced to penal servitude; (2) prisons for those sentenced to imprisonment; (3) houses of detention for persons destined to spend time in detention, and (4) prisons of confinement for (a) those sentenced to death, (b) those awaiting trial. In view of the different characters of these prisons, they should, in principle, be established independently of one

another, and, in the case of their being erected in the same area, they are usually separated. At present, workhouses are not classified as prisons, but are attached to prisons for the sake of convenience.

Treatment of Prisoners

Object of Treatment As to what is the primary and fundamental purpose of punishment of imprisonment, nothing is stated in the Criminal Code or in the Prison Code now in force. Some Japanese jurists are of opinion that punishment must remain in its essence retributive and deterrent, accordingly a prisoner must be made to expiate his offence by a dull, soulless, and monotonous servitude, but such new scholars of criminal law and penology as Dr. Yeiichi Makino, Professor of Criminal Law, Tokyo Imperial University, Prof. Kameji Kimura and Dr. Akira Masaki, Assistant Director, Bureau of Prisons, Department of Justice, interpret it as a form of education and emphasize its socializing effects. Be that as it may, Japanese juridical authorities have for more than ten years endeavoured to reform prisons on the latter principle. On April 4, 1924, Dr. Kisaburo Suzuki, the then Minister of Justice, declared at a meeting of officials connected with prisons and criminal affairs, "The enforcement of punishments consists in the adoption of such measures as may improve the quality of convicted persons and socialize them as good and law-abiding members of society." Further, at a meeting of the governors of prisons and reformatory prisons for minors held on October 11, 1927, Dr. Kado Hara, the then Minister of Justice, gave the following instructions:

"The object of enforcing punishments on the inmates of prisons is to cause them to reflect on and repent their offences and to turn

them into good members of society. There are many and various means of attaining this object, but they are, in the final analysis, to cultivate their character, to give them training for different occupations, and to maintain their health in good condition, while improving the circumstances which constitute the causes of their offences so as to enable them to lead a decent life. In order to realize the end aimed at, therefore, a mere confinement and watching of them is not sufficient; on the contrary, it is necessary to know their individual characteristics and to inquire into and ascertain the motives and causes of their crimes, giving them thereby appropriate treatment."

Classification System Inasmuch as punishment by the restriction of personal liberty is enforced today principally with a view to education, criminals are properly classified according to ages, characteristics, terms of imprisonment, numbers and kinds of offences, and are then confined in different prisons so as to facilitate the enforcement of adequate measures for their education in accordance with their categories and, further, to prevent prisons from becoming breeding-places of crime through mutual contact and contagion as the result of promiscuous confinement of all grades. When it is impossible to distribute them among independent prisons and they are confined in the same area, prisoners are usually classified strictly and confined separately according to their categories. There are prisons for minors at Odawara, Kawagoyé, Himéji, Okazaki, Iwakuni, Kurumé, Morioka, and Hachioji and in Hokkaido for the confinement of those under 18 years of age sentenced to penal servitude or imprisonment, prisons for aged persons at Hamamatsu and Yonago and for

women at Tochigi, Miyoshi and Miyazu. Further, there are prisons for the confinement of persons sentenced to terms of imprisonment exceeding 10 years at Kosugé, Takamatsu, Hiroshima, Okayama, Miyagi, and Abashiri; the Abashiri agricultural prison is intended for training prisoners as agricultural labourers. At Uraga, located in an old warship anchored off the port, is a branch of the Odawara prison for minors. There juvenile offenders are given training as fishermen, and sometimes engage in coastal and deep-sea fishing in sailing-vessels or steamers.

In addition to the above-mentioned classified confinement, with a view to proper individualized treatment, they are examined by doctors, alienists, psychologists and educationists to find out their psychopathic idiosyncrasies, hereditary natures, physiological peculiarities, adaptabilities to occupations, educational possibilities, etc. in different prisons previous to their confinement. Further, a "social diagnosis" is made by collecting reports on them from city, town and village offices, police stations, schools, and organizations devoted to their protection in order that they may be suitably classified for treatment.

Progressive System A treatment on the progressive system is accorded to convicts who form the bulk of the inmates of prisons. This treatment aims at leading them to repent and their treatment is graded in proportion to their aspiration and diligence, thereby gradually bringing them to the conditions of ordinary social life. The relaxation of the enforcement of penalties not merely extends the scope of the personal liberty of convicts, but serves to cultivate a sense of responsibility on their part and strengthens their will for self-reclamation. In short, its chief pur-

pose is not to make "good convicts", but to turn them into "good citizens." The treatment in question does not apply to persons who are sentenced to imprisonment for less than 6 months, aged and decrepit persons, and those of unsound mental or physical faculties. Any prisoner committed for the first time is kept in solitary confinement for a certain period of time and a close study is made of him. In the basis of the results he is classified according to character, physical and mental condition, number of convictions, age, nature of crimes, term of service, home, health and thought.

The Four Stages The stages of the progressive treatment are: (1) those under investigation; (2) those in course of correction and training; (3) those in process of improvement; and (4) those who have developed a sense of responsibility. After being subjected to a study of character, convicts are received into the first class to begin with. Those who are accorded this treatment are given fixed marks according to the terms of imprisonment and promotion to higher classes is given only when a sufficient number of marks have been earned by diligence, good conduct, and growth of the sense of responsibility and of the will for self-improvement. Those belonging to the first and second classes are kept in confinement in association, while those belonging to the third class are kept in confinement in association in the day time, but in solitary confinement at night, those belonging to the fourth class are confined in a special room.

The Treatment Governors of prisons may cause convicts in each workshop to elect some from among them to keep the workshop in good order and look after other necessary matters. The elected ones must be popular, trustworthy and belong to

the third class. Prisoners belonging to the third class must jointly, once a month, carry out the work of cleaning and sweeping of prison grounds and keeping them in order. Except in cases of special need, prisoners belonging to the fourth class do not undergo physical examination or have their cells searched, and, further, are permitted to talk with one another so long as it does not interfere with the maintenance of discipline. They are also permitted to elect two representatives that they may express their desires to the authorities. These representatives are nominated by the governor of the prison concerned from among several candidates elected by prisoners belonging to the fourth class. Prisoners of the fourth class may be permitted to take a walk in a place designated for that purpose in the prison grounds in hours of recess, or hold meetings, take a walk in a group, or hold athletic meetings on days free from labour. They give a pledge to the governor, holding themselves responsible for the physical examination of those of their own class, for the search of their cells and keeping them in order, and the maintenance of order among themselves. In case of any one of them violating the pledge, the privileged treatment will be suspended for a part or all of them. Any one of those belonging to the first class who earns more than ¥5.00 for labour may be permitted to use less than one-fifth of the monthly total in buying postage stamps and in other ways that are deemed necessary; any one of those belonging to the second class less than one-fourth of the monthly total; any one of those belonging to the third class less than one-third of the monthly total; and any one of those belonging to the fourth class less than one-half of the monthly

total. While those of the first class are not permitted to change the kinds of labour they engage in, those of the second class and up are permitted to do so. Those who have superior skill or high efficiency and belong to the third class are charged with the task of directing industrial work and those who are similarly qualified in the fourth class are given the task of directing and supervising it. Those of the third class who have particularly superior skill and high efficiency are permitted to work for their own profit in time other than working hours, but that time is limited to two hours per day.

Moral Education Prisoners belonging to the first and fourth classes are chiefly given individual moral and religious instruction, while those belonging to the second and third classes receive the same instruction en masse. Listening to music broadcast on the radio and listening to the playing of gramophone records is permitted to those belonging to the second and higher classes. The time for the enjoyment of this privilege is fixed at twice a month for those belonging to the second class, which may be increased to three times and four times for those belonging to the third and fourth classes respectively. The governor may permit members of the third and fourth classes to hold moral cultural meetings, the number of times being limited to once for those belonging to the third class and twice for those belonging to the fourth. Prisoners of the fourth class are permitted to read books or see pictures in the prison library on days free from labour and may also borrow suitable newspapers and magazines from it. Those of the third and fourth classes may be permitted to play athletic games, the number of times for such amusements being

limited to once a month for those of the third and twice for those of the fourth class. While those belonging to the first class are permitted to interview or send letters only to their relatives and those who are concerned with their protection, those belonging to the second and higher classes are permitted to interview or send letters to those who do not interfere with their moral instruction, besides their relatives. The number of times of interviews and of writing letters increases in proportion to advances in class.

Provisions, drinks and other articles for the maintenance of the health of prisoners are uniform and do not differ according to classes. Those belonging to the fourth class are given white garments, are permitted to decorate their cells with flowers or pictures, and are lent table-ware and other sundry articles for common use.

Suspension of Progress In case any prisoner violates the prison regulations, the treatment on the progressive system may be suspended for up to a period of 3 months, but, in case it is recognized that there are certain circumstances which have to be taken into consideration before the suspension or in case the prisoner shows signs of sincere penitence, the enforcement of the sentence of suspension may be postponed for a fixed period of time. If he further violates the prison regulations during that period, the sentence of suspension will be enforced, but, if he passes the said period without any further violation, it will not be carried out. Further, in case a prisoner shows marked signs of penitence after the sentence has been delivered, this will be taken into consideration and the sentence repealed in full or in part. In case a prisoner who has been punished with suspension of the treatment

again violates the prison regulations, he may be transferred to a lower class according to the circumstances of the case. When a prisoner who has been punished with such degradation shows marked signs of penitence, he will be restored to his former category without reckoning his marks.

When any person of the fourth class has served one-third of his term of imprisonment and the prison governor considers him fit for provisional release, his case should be reported on to the Minister of Justice. Even one who belongs to lower classes and who has served one-third of his term and shows notable signs of penitence and is considered to be fully adapted to social life may be specifically granted provisional release, subject to the approval of the conference for provisional treatment on the progressive system.

Prison Labour

Paragraph 2 of the Japanese Criminal Code provides: "Any convict sentenced to penal servitude shall be detained in a prison and subjected to a fixed amount of labour." This "fixed amount of labour" constitutes prison labour. It is not legally imposed on convicts punished with imprisonment or custody, but its imposition is permitted in case they desire it. Since the institution of the *ninsoku-yoseba* at Ishikawajima, hard labour has been recognized as an essential part of the discipline of prisoners, and present-day criminal theory in Japan is opposed to punishment by the restriction of personal liberty without the imposition of hard labour. Accordingly, the prison authorities are encouraging industrial work at their own request by prisoners punished with imprisonment or custody.

The Three Systems Industrial work

in prisons is managed on three systems, viz.: the public account system, the "made-to-order" system, and the contract system. Under the public account system, a prison itself purchases materials, provides itself with the necessary machinery, implements and tools and makes prisoners manufacture or repair articles or carry on labour under the direction of prison officials, and sells the products. Under the "made-to-order" system, the chief materials are supplied by the outside buyers and prisoners either manufacture or repair articles under the direction of industrial work experts and assistant industrial work experts on the prison staff, and, when the articles are either manufactured or repaired, the wages of the workers and the cost of requisites in the manufacture or repair are calculated and the prices of the articles fixed by the standard of current prices. The articles are then delivered to the buyers on payment of the account. Under the contract system, applicants have to supply not only materials, machinery, implements and tools, but also experts for the direction of work, a prison only offering the labour of prisoners and receiving their wages in exchange. In the contract system now in force in Japan, the prison authorities undertake the supply of provisions, etc. to prisoners as well as their supervision and selection for work and nothing like the lease system that was in vogue in South American countries at one time is recognized.

Among the above-mentioned three different systems, the public account system does not permit any third party other than the prison officials to direct prisoners in the prosecution of their work as in the case of the contract system and, moreover, enables the prison authorities to select and impose on pris-

oners such kinds of work as are suited for their moral instruction and vocational education. In these respects, it is considered to be the most desirable for the enforcement of penological measures and its adoption is greatly encouraged.

Current Prices Considered When the selling prices of the articles produced in prisons are lower than current market prices, there is a fear of their adversely affecting private undertakings generally. Paragraph 17 of the prison industrial work regulations, therefore, provides: "The selling prices of the manufactures and agricultural products turned out under the public account system shall be calculated by the standard of current market prices, after taking into account the cost of materials and wages paid for the work, but the prices of articles intended for self-supply need not be fixed by the standard of current market prices." As, however, prisoners' wages are low, the selling prices are liable to become low, and the cry that prison products compete unfairly with products of private industries was heard many years ago, and as early as 1891, the competent authorities issued to the prisons throughout the country the following instructions, "As industrial work by prisoners may, it is feared, obstruct the business of the local people by reason of the methods adopted for its execution, care shall be exercised lest the local industrialists of minor standing should suffer or those private undertakings that bid fair to develop be nipped in the bud by using an excessive number of prisoners in one line of industry or by starting such industries as have hitherto been carried on by many local inhabitants and conducting them on a large scale." At the present day, the prisons principally adopt the "State use system", namely, a policy of manu-

facturing articles needed by the Government offices and public organizations and are taking pains to avoid competition with private undertakings as much as possible.

Training for Occupation In imposing work on prisoners, the most suitable kinds of work are given them not only by taking into consideration health, economy, terms of imprisonment, ability, occupations in free life, and future means of livelihood, but also by scientifically examining their individual adaptabilities to occupations. Industrial work in prisons is the most suitable means of giving moral instruction to prisoners; in particular, to train them in certain lines of work in the course of detention is the best way to prevent their again perpetrating crimes. Since 1926, therefore, houses for the training of prisoners for occupations have been erected in different prisons throughout the country and there prisoners have been trained for occupations requiring special skill such as those of carpenters, joiners, furniture-makers, tin-smiths, plasterers, timber-mill workers, painters, smiths, shoemakers, etc. The term of training is 6 months, during which fundamental theories and practice are taught.

Reward Given as Favour Working hours are from 12 to 13 hours a day and differ according to months. It is permitted to give educational or moral instruction to prisoners or allow them to take exercise within these hours. A time of recess—15 minutes in the morning and 25 minutes in the afternoon—is given them. All the income from the work of prisoners goes into the national treasury, irrespective of whether it arises from work or from wages. A prisoner who has worked may receive a reward as a favour. This gratuity varies from ¥0.20 to ¥10.00 per month and the sums are fixed

according to conduct, character, kinds of work, and the results of the work done. Any one who does particularly superior work is given an additional reward not exceeding ¥10.00. The reward for his work is, in principle, not given a prisoner until he is released from prison, but (1) in case a prisoner is entitled to ¥10.00 a month or more, and the money is needed to support his father, mother, wife, child, or to compensate the sufferer from his crime, or to purchase books or other necessary articles, one-third of the amount may be given him while in confinement, and (2) in case it is particularly necessary to do so for the sake of a prisoner, the entire reward may be handed over to him, irrespective of its amount and the way of spending it. In case a prisoner has been injured or has fallen sick while at work, and has died in consequence or has become unable to carry on any work, he may be entitled to a pecuniary reward according to the circumstances of the case. This reward is fixed within the limit of from ¥50 to ¥180 according to the details of the case.

The Hito Prisoners are given moral instruction en masse on national holidays, on the first two days of January and the 31st of December, or on Sundays. The same instruction is also given prisoners individually in case it is deemed necessary. It is chiefly given by chaplains appointed from among priests of the Shinshu sect. Adult prisoners who are uneducated and those under age receive an elementary school education. The latter are also given military training, which gives very satisfactory results in the way of moral instruction. Prisoners are permitted to read books and look at maps and pictures, unless it is injurious to the good order of the prison, but writings concerning current topics are for-

bidden. As, however, it is needful to keep them acquainted with changes in the condition of society, lest they should fall behind the times, a specially edited newspaper "Hito" (Man) is issued and distributed among them.

Aid of Discharged Prisoners

In its initial stage of development, the aid of discharged prisoners was largely undertaken by the Government. As already stated, the systems of "kozan-yekifu" and of "ninsoku-yoseba" were the origin of punishment by the restriction of personal liberty and incidentally of Government provision for the protection of ex-convicts. After the Meiji Restoration, in 1881, a system called "betsubo-ryuchi" (detention of discharged prisoners in separate quarters) was instituted, under which discharged prisoners who, after the expiration of their terms of sentence, had no one to go to, were detained in special quarters in prisons to enable them to make a living and to be protected by the authorities. As, subsequently, the number of these ex-convicts increased, this system had to be abolished in 1888, but, feeling that if those who had served their terms and had no one to look to or live with were allowed to live as they were inclined after their liberation, they might, it was feared, again lead a life of crime, the Government encouraged charitably disposed persons to carry on work for their welfare. Thus, the aiding of discharged prisoners by individuals and private organizations grew in scope.

The Organizations Among these organizations, one noted for its systematic constitution and management was the Shutsu-gokunin Hogo Kaisha (Ex-Convicts Protection Co.) established by Mr. Meizen Kinbara in Shizuoka prefecture. In 1907,

the Government decided to make an appropriation of ¥10,000 from the national treasury every year for the encouragement of the work and, later in 1912, the sum was increased to ¥30,000. With the development of the work, the number of organizations grew and was returned at 211 throughout the country at the end of 1912. In 1913, Baron Hachiroyemon Mitsui, head of the House of Mitsui, donated ¥750,000 to the work, and with this money the Hosen-Kai, a foundation, was established for the control of, and extension of help to, various organizations interested in the work throughout the country. In 1925, the Government subsidy was increased to ¥100,000, and, moreover, since 1923, the Imperial House has made an annual grant to encourage the work, with the result that the work has made a steady development, the organizations today number approximately 800.

The Beneficiaries The persons protected by these organizations are not limited to those who have served the terms of their sentences, but include those who have been provisionally released; those, whose prosecution is suspended; those, the enforcement of whose sentences is suspended; and those who have been released from punishment for minor offences; as

well as the members of the families of those who are detained in prisons. The method of protection is roughly classified into (a) quarters and protection, (b) indirect protection, and (c) temporary protection. Those to whom the method (a) is applied are quartered in places specially selected by the above-mentioned organizations and are given board, lodging and clothes as well as employment. Those to whom the method (b) is applied are not directly protected, but visits are paid to their fixed places of residence from time to time so as to give them advice and suggestions. Those to whom the method (c) is applied are given only temporary help at the time of liberation from prisons such as providing them with clothes and other necessaries and journey money.

Today, there exists in the Department of Justice the Section for the Protection of Ex-Prisoners which undertakes the direction and supervision of the welfare work of various associations, but as it cannot be expected that a small Section can thoroughly undertake such widespread work, it is increasingly advocated in different quarters that a system for the promotion of the welfare of ex-convicts should be instituted and the work connected therewith conducted by the State.

Police System

Its Fundamentals

There are two aims of the national administration. One is the administration of political affairs for the direct benefit of the nation as a whole, and the other is to protect the public welfare of the individuals who compose the nation. The function of the police is to look after the latter. There is a judicial func-

tion of the police that goes side by side with the first one, but the principal significance of the establishment of the police system is in its protection of public welfare. The work it performs can be considered more in a negative aspect than a positive one for it does not promote welfare work so much as it prevents and roots out matters which are, or may be, detrimental

to peaceful social life. The police are endowed with authority to enforce the law or to give orders to the people. Police authority forms a part of the sovereign power of the State.

Authority Vested in State In Japan police authority is entirely invested in the State and is not delegated to other public bodies. In European countries, there are commonly the state police and the local police, the latter being under the jurisdiction of local authorities. In Japan all the police come under the direct administration of the State and no chiefs of local governments or local governments themselves have power over them except in a very few limited subjects. The police are administered in the name of the Emperor by the Minister of Home Affairs through the Superintendent-General of the Metropolitan Police, in Tokyo prefecture, governors of other prefectures and the Hokkaido procurator. Although nominally under the Governor of Tokyo prefecture, the Superintendent-General of the Metropolitan Police Board in Tokyo takes his orders direct from the Home Minister as the Board has many political responsibilities unknown in other prefectures. The appointment is actually a political one, the ordinary police business being carried out by the Chief of Police. In the Hokkaido and other prefectures the highest police official is the Chief of the Police Division. Under the Chiefs of Police are the police superintendents, inspectors, assistant inspectors and policemen. A police superintendent is appointed chief of a police station or secretary of a Police Division or in Tokyo and Osaka prefectures he may be appointed inspector over several police stations. A police inspector or an assistant police inspector may in some cases be

appointed chief or secretary of a police station. Policemen are divided into sergeants, indoor and outdoor service men, special service men, and police-detectives.

As mentioned above, police officials carry out judicial functions, and when acting in the capacity of judicial police officials and under the dictates of the public procurators they execute warrants of arrest or detention and arrest persons in flagrant offence. They may seize private possessions or search a house by order of a Court of Justice, an examining judge or a public procurator, or help a public procurator in the investigation of criminal cases.

In Time of Peace and Crisis In times of peace the maintenance of public order rests with the police. Individual policemen wear sabres. Pistols are carried only in special cases though in the police force there are troops of armed constables, while if matters become too serious and on special occasions, the gendarmerie is called on for help. The gendarme is a kind of military policeman, but at such times as the police force is too weak to keep public order, a Governor may ask for the aid of the gendarmerie. Moreover, at a time of crisis or extraordinary social disturbance, the army takes the place of the usual police force and acts with a despotic authority without limitation of the Law. The occasions which may call forth the military power for keeping public order are as follows: (1) when the country or a district is placed under martial law in times of war, (2) when a district is put under martial law for the maintenance of public order, (3) when the governor asks for the help of the army for subduing social disturbances, and (4) when a Divisional Commander recognizes the need of military power for keeping local

order in an emergency in which the request from other authorities is too late.

Police Business

Police business in Japan is many-sided, and may be classified into 4 main lines and 24 kinds:

Public Peace (a) supervision of publications. The publication of all kinds of printed matter should be reported and a copy of each must be sent to the authorities. Secret publication is strictly forbidden. A sum of money as guarantee of good faith has to be deposited by the publishers of newspapers or periodicals which deal with political problems. The name of the person responsible for any publication must be printed on the publication. Secret matters which come under the control of the public procurators, the Ministers of War and Marine, and the Minister of Foreign Affairs must not be reported in newspapers or periodicals. The Home Minister may prohibit the publication of a periodical or any other printed matter which he considers detrimental to public welfare and morals.

(b) Supervision and care of public meetings, organization of societies and mass movements. According to the Public Peace Police Law, all public meetings on political questions and some other meetings which come under control of the authorities must be reported to a police-station beforehand. A policeman may be present at such a meeting and may stop a speech or close the meeting. The organization of such associations or societies as may endanger the existing form of Government and system of private property is strictly forbidden. The said P. P. P. Law inflicts heavy penalties on those who break these regulations.

(c) Supervision of businesses or

commercial shops. Most businesses are free, but in some cases some kind of police supervision is necessary in the interests of public welfare, hygiene, prevention of damage, the safety of traffic, and social economy. For instance, such shops and businesses as inns, public baths, employment exchanges for geisha and prostitutes, credit information businesses, barbers, seal or stamp engravers, old clothes dealers, peddlers and stall-holders are inspected or taken care of by the police. Pawnshops and curio or second-hand shops are under special regulations and police inspection and supervision is thoroughly practised as many stolen articles find their way into these shops, and lead to excellent results in the arrest of thieves and burglars. Guides, scribes and employment exchanges for profit are also under special regulations and strict supervision.

Number of shops and houses under police supervision at the end of 1933 was as shown below:

(Items less than 10,000 are omitted)	
Pawn shops	13,300
Dealers in second-hand articles	270,968
Hotels	49,552
Boarding houses	10,436
Doss-houses	14,442
Restaurants	63,084
Cafés and bars	35,200
Geisha houses	20,949
Bath-houses	22,235
Eating houses	159,340
Employment exchanges	12,879
Printing houses	13,705
Barber's shops	74,694
Woman hair-dressers	55,095
Game houses	20,398
Building contractors	31,125
Shipping agents	11,839
Waggon-business men	149,446
Taxicab garages	23,381
Scribes	18,640
Bicycle dealers	37,676
Rikishamen	20,468
Factories	74,701
Theatres	35,095
Cinema theatres	77,577
"Yosé" (Story-telling houses)	16,302
Licensed prostitution houses	10,281

(d) Religion. It is the duty of the police to prevent the desecration of shrines and breaches of the peace in temple grounds. Superstitions and superstitious actions are prohibited by the Police Penal Law.

(e) Accidents. The police take charge in cases of fire, floods, explosions, of people being injured, etc. Regulations are issued on the handling of guns and explosives; the wearing of swords or the like is strictly forbidden; the handling or selling of poison is under a special regulation. Sulphur and oil businesses are under police care also. Buildings are under police supervision for their beauty, fire-proofness, and hygiene; factories, warehouses, theatres, and public resorts receive special attention. Crematories, slaughter-houses and incinerators must not be within residential or commercial districts of cities. Regulations regarding buildings are stricter than in Western countries because of the large number of wooden houses liable to fire and the

constant fear of earthquakes. Electricity and gas businesses must not endanger the lives of people. Mines are under a special police regulation as they are most liable to fatal accidents. Prevention of floods also comes into the sphere of police business.

For the prevention and extinction of fires, fire-brigades are established in cities under the control of the Chief of the Police Division in the prefecture. In Tokyo prefecture, a fire division is established in the Metropolitan Police Board and fire-brigade stations are located in different parts of Tokyo. In the larger cities, Osaka, Kyoto, Yokohama, Kobé and Nagoya special fire-brigade stations are established by the State. In the smaller municipalities fire-guilds are established at the expense of local self-governments. The firemen are volunteers and differ from those in the said cities who are officials of the State.

Statistics of fires happened during recent five years are as follows:

NUMBER OF FIRES AND AMOUNT OF DAMAGES

	1929-1933				
	1929	1930	1931	1932	1933
Number of fire	11,983	14,610	16,286	18,334	18,800
Number of houses damaged	25,174	22,280	22,334	25,690	19,461
Amount of damages estimated (In 1,000 yen)	67,343	55,637	54,976	61,730	35,897
Average amount of damages per one house (Estimated)	¥ 2,675	2,497	2,461	2,402	1,844

NUMBER OF PERSONS SUFFERED FROM THESE FIRES

	1929-1933								
	Firemen			People			Total		
	Dead	Injured	Total	Dead	Injured	Total	Dead	Injured	Total
1929	16	1,618	1,634	457	1,130	1,586	473	2,757	3,239
1930	20	2,204	2,224	415	911	1,326	435	3,115	3,550
1931	17	1,806	1,823	473	922	1,395	490	2,728	3,218
1932	28	1,981	2,009	451	1,169	1,620	479	3,150	3,629
1933	20	1,761	1,781	570	960	1,530	590	2,721	3,311

(f) Public morals. The police look after the maintenance of good public manners and morals. Japan

has a licensed prostitute system and forbids private prostitution and conniving at it. Through the efforts of

Christian and other religious and public bodies and the growth of other means of pleasures prostitution is growing less, but it is a duty of the police to see that the prostitutes are treated as humanely as possible as long as the term exists. All pleasure resorts such as theatres, places of performances, wrestling, movies, etc. are carefully supervised and any obscene or immoral performances prohibited.

Restaurants, dining rooms, bars, cafes and other eating places are under police supervision. The laws for prohibiting liquors and smoking to minors, the prohibition of lotteries, misbehaviour in the street or outdoors, and the regulations regarding street advertisements and the erection of monuments must be enforced.

(g) The care of men who are a danger to public peace and welfare, juveniles who are addicted to bad habits, ticket-of-leave men, the insane, beggars and vagrants are supervised by the police.

(h) Actions which may harm others such as forcing an interview, extorting contributions, blackmail, causing disturbances, obstruction, etc., are forbidden by the Police Penal Law. Deceitful actions, spreading false reports, and the mishandling of dead bodies come under the care of the police. Obstructing officials in pursuit of their duty is strictly forbidden. The care of lost articles, prohibition of deceitful religious actions, the supervision of "mujin-ko" and "tanomoshi-ko" or mutual financing associations come under police power to some extent.

Public Hygiene The problem of the health and hygiene of the people is one of the greatest concerns of the Department of Home Affairs, and in many points the responsibility of looking after such cannot be confined to the police alone, though in

its direct management the police have much to do.

(a) Prevention of epidemics. For the prevention of epidemics there are many laws in force, the most important of them being the Epidemic Prevention Law, the Regulation for the Medical Inspection of Aviators, the Seaport Quarantine Law, the Vaccination Law, the Tuberculosis Prevention Law, the Trachoma Prevention Law, the Leprosy Prevention Law, the Venereal Diseases Prevention Law and the Parasites Prevention Law. The water police help in the medical inspection of passengers and goods arriving in vessels from abroad. The annual compulsory cleaning of individual houses and public buildings, drains, wells, dumping grounds etc. is supervised by the police. When an epidemic breaks out policemen are used to try and confine it to as small an area as possible.

(b) Medical. As the health and welfare of the people depend on proper medical attention, doctors, dentists, midwives, nurses, masseurs and acupuncturists are under special regulations, as also are druggists and pharmacists. Poisonous chemicals are well looked after.

(c) General Health. A law is in force prohibiting the sale of unwholesome food, and utensils for eating, drinking and preparing food are under police supervision. (See Chapter XXXII.)

Traffic Police (a) Road. The police are responsible for safety on the streets. "Walk on the left" is the rule of the road in Japan.

(b) Vehicles. Railroads, electric cars, automobiles, trucks, waggons, rikishas, bicycles etc. are under police supervision.

(c) Water police. The water police look after foreign-going vessels entering and leaving open ports, navigation in closed ports, rivers

and lakes, and the business of steamship companies doing a coastal trade.

(d) Ocean navigation has many international ramifications and though there are countless matters which ought to come under police supervision it is separated from common police business and put under the administration of the Department of Communications.

(e) The aviation police are put under the management of the Minister of Communications.

(f) Colonial police come under the control of the Minister of Overseas Affairs except in some cases which may come under the supervision of local governments.

Number of accidents caused by traffic is as shown below :

	1929	1930	1931	1932	1933
Walkers					
No. of cases	25,517	27,666	26,776	26,933	24,110
Killed	1,645	1,733	1,676	1,743	1,787
Injured	22,746	25,433	24,568	25,173	22,403
Automobiles					
No. of cases	13,051	13,473	14,938	16,832	16,430
Killed	219	216	270	280	318
Injured	5,309	5,542	5,955	6,792	6,269
Bicycles					
No. of cases	9,133	11,420	15,544	16,447	13,698
Killed	160	142	187	286	266
Injured	5,743	7,815	10,201	11,450	10,421
Others					
No. of cases	10,376	10,819	11,565	11,009	10,405
Killed	424	438	439	392	550
Injured	5,241	5,831	5,614	5,835	5,775
Total					
No. of cases	53,077	63,411	68,823	71,221	64,643
Killed	2,448	2,536	2,572	2,801	2,921
Injured	39,633	43,621	46,338	49,259	46,959

Police and the People

The function of the State, as far as it concerns the economic life of the people is largely protective and administrative and certain laws and ordinances of the State have to be imposed on various businesses in order that the people shall be fully protected. The police works by orders from higher authorities at the request of the Ministers of Agriculture and Forestry, Commerce and Industry, and Finance.

(a) Banks, savings banks, mutual financing associations, negotiable security businesses, trust businesses, insurance businesses, commercial exchanges, the central whole-

sale markets in the six largest cities, foreign trade business in important articles, weighing and measuring machine businesses, and auditors partially are under police supervision or limitations.

(b) Agriculture is supervised by the police in such matters as the prevention of the spread of noxious insects, the control of plants imported or exported, the fertilizer industry, agricultural warehouses, the sericulture industry and the control of rice imports and exports.

(c) The hygiene and prevention of epidemics among domestic animals is looked after by the police. Many laws are enforced regarding the improvement of animals, and

police power is needed for a proper practice of them, especially in connection with horse-racing.

(d) Forestry police mainly prevent damage to the forests.

(e) Fishery police protect the propagation of aquatic animals and at the same time look after the safety of the fishermen. There are many laws and regulations on fisheries, whale-fishing, fishing boats, etc.

(f) The hunting of beasts and birds is limited to those mentioned in the revised Game Laws of 1918, the seasons and districts of hunting are put under police regulation.

(g) For the protection of labourers there are numerous laws in force, for instance, the Factory Law, Laws on the limitation of age of

factory or marine workers, the Labour Accident Prevention Law, the Mine Law, Ordinance regarding the enlistment of workers. Policemen either help factory or mine inspectors or directly handle matters mentioned in these laws. Labour movements and disputes many times call for the use of police power.

Police Stations and Officials

At the end of 1933 there were 1,199 police stations, 24 water-police stations, 4,551 branch stations, 14,056 police-boxes.

At the same time there were 52 chiefs of police divisions, 339 police-superintendents, 1,632 police inspectors, 3,604 assistant police inspectors, 59,835 police sergeants and policemen, total being 65,462.

EXPENDITURES FOR POLICE BUSINESS

	1930-31	1931-32	1932-33	1933-34	1934-35 (Budget)
Salaries	¥ 66,608,137	67,153,356	66,898,289	69,831,646	72,444,482
Expenditures for police stations	9,788,041	9,206,728	8,634,579	9,005,192	9,614,373
Secret service funds	688,890	738,636	683,895	678,215	783,858
Total	77,075,358	77,098,720	76,216,763	79,515,053	82,842,713
Repairs of police stations					
Ordinary	810,734	670,817	677,007	634,671	623,979
Extraordinary	1,002,760	1,419,048	1,308,673	1,558,666	2,380,141
Grand Total	78,888,852	79,188,585	78,202,443	81,708,390	85,846,833
Average expenditures per one family	6.58	6.24	6.16	6.43	6.76
Average expenditures per one person	1.32	1.23	1.21	1.27	1.33

CHAPTER XXVIII

EDUCATION

Historical Background

Chinese letters and Confucian books were first introduced to Japan in the third century, and it was then that the civilization of the country made a real start. From the nearby peninsula of Korea came sericulture, weaving, brewing, and the art of the blacksmith. It was about this time that the Imperial Prince Wakairatsuko established a Court School.

In the sixth century Buddhism came to the Island Empire to give added material progress to the Japanese civilization, and in 607 the Imperial Prince Shotoku-taishi (see Chapter III) caused the Horyuji Temple to be built at Nara and there he established a school in the temple. These were the earliest schools of Japan.

In the latter half of the seventh century a college in the capital and some provincial schools were established to educate officials, according to the Taiho Laws. Later, in the Heian Age, the courses of study became encyclopedic and both public and private schools were established. In the Muromachi Age school education suffered a decline and only two places of study were recorded, namely, the Kanazawa Library and Ashikaga School, although there might have been private lecture halls kept secretly by scribes and Buddhist monks.

The Tokugawa Shogunate encouraged the study of Confucianism and several schools of this moral system and Chinese philosophy were introduced, and education extended

to the common people. There were established many schools; the highest one was called the Shohei Hill Academy or Shohei School, which was established by the Shogunate. The central government had many other schools, while each local clan government also had its own schools. In addition to these, private schools and "tera-koya" appeared all over the country for the education of the people in general.

"Tera-koya" Education

The "tera-koya" needs some special explanation, as it played the most important part in the education of the masses before the Meiji Era, and laid the foundation for the remarkable progress of elementary education in new Japan which has surprised the world.

The word "tera" means Buddhist temple and "koya" children's house, so the tera-koya was a school for children established by a Buddhist temple. It was originated many years before the time of the Tokugawa Shogunate by Buddhist monks, but at first it was rather for the privileged class of people and the number of these schools was limited. The orderly system of national politics of the Tokugawa Shogunate inaugurated an age of peaceful life for all classes of the people, and civilization and culture made unusual progress. Side by side with the governmental schools for the samurai class, tera-koya education spread among the common folks in business and farm quarters. It gradually ceased to be entirely in the hands of the monks, and assum-

ed a form and nature quite different from the original.

The school-house was no longer in or attached to a temple; teaching was not restricted to the monks; the teacher might be a samurai, monk, doctor or Shinto priest. "Tera-koya" became merely a general name, and the founders of tera-koya schools chose any name they liked for their own. The size of the schools was diverse, the largest one accommodating as many as two or three hundred pupils. There was rarely more than one teacher, but in the larger schools there might be an assistant. The age of the pupils ranged from 6 to 15 years. It was co-education, although the sexes sat apart. The courses of study were commonly penmanship, Japanese literature, and the use of the abacus, with such optional subjects as Chinese literature, poem composition, sewing, flower-arrangement or tea ceremonies. Many textbooks on moral precepts and letter writing were published and used in these schools. These schools were usually kept up largely out of the pocket of the school master himself, for his work was entirely voluntary, inspired by pure devotion to service, for which he gained the honour and respect of the community. According to the report of the Department of Education, there were 15,862 tera-koya in Japan at the beginning of the Meiji Era, or just before the establishment of the new elementary school system. No wonder that the rate of school attendance falls little short of 100%, although it is compulsory now.

It must be remembered also that technical schools had made considerable progress in old Japan. Medical schools in particular were established in the Taiho Era, and medical science made steady progress toward the middle of the Yedo Age. The

Tokugawa Shogunate established a medical school in 1765, and local clan lords followed this example. There were several private ones well known to the people. But these taught the Chinese method of the science, and the "materia medica" was almost entirely of herbs and animal matter. The modern or Western medical science and its system and practice were introduced through Dutchmen at the end of the Yedo Era, so we may say that medical science was the earliest of all the sciences that were learned by the Japanese people from the Westerners.

Educational Administration

The present educational system of Japan dates from 1872, the 5th year of Meiji, when elementary education was made compulsory. Its principles are stated in the Imperial Rescript on Education issued on Oct. 30, 1890. This world-renowned rescript was published to lay down leading ideas and principles for the guidance of the Japanese, and it reads as follows:

"Know ye, Our Subjects!

Our Imperial Ancestors have founded Our Empire on a basis broad and everlasting and have deeply and firmly implanted virtue; Our subjects, ever united in loyalty and filial piety, have from generation to generation illustrated the beauty thereof. This is the glory of the fundamental character of Our Empire, and herein also lies the source of Our education. Ye, Our subjects, be filial to your parents, affectionate to your brothers and sisters; as husbands and wives be harmonious, as friends true; bear yourselves in modesty and moderation; extend your benevo-

lence to all; pursue learning and cultivate arts, and thereby develop your intellectual faculties and perfect your moral powers; furthermore, advance the public good and promote common interests; always respect the Constitution and observe the laws; should any emergency arise, offer yourselves courageously to the State; and thus guard and maintain the prosperity of Our Imperial Throne, coeval with heaven and earth. So shall ye not only be Our good and faithful subjects, but render illustrious the best traditions of your forefathers.

The way here set forth is indeed the teaching bequeathed by Our Imperial Ancestors, to be observed alike by Their Descendants and subjects, infallible for all ages and true in all places. It is Our wish to lay it to heart in all reverence, in common with you, Our subjects, that we may all thus attain to the same virtue."

The 30th day of the 10th month of the 23rd year of Meiji,
(Imperial Sign Manual)
(Imperial Seal)

All school education in Japan is supervised by the State, being partly entrusted to local public bodies such as the prefectural councils, towns and villages.

Private individuals are also allowed to found schools and universities, although here too the Government does not give much latitude of method or scope, and the uniformity of school education in all parts of the Empire has worked well in bringing the degree of advancement in modern ways and thought to almost the same level throughout the land, and greatly strengthening the na-

tional spirit and unity of the people.

The points entrusted to local public bodies are chiefly financial matters, pertaining to the establishment and maintenance of schools, some of which are obligatory while some are left to the discretion of local bodies. The obligatory matters are the establishment by Hokkaido and the prefectures of normal schools, middle schools for boys and girls, schools for the blind and for the deaf-and-dumb, technical schools by order of the Minister of Education, and that of ordinary elementary schools by cities, towns and villages. Municipalities may not establish higher normal schools, and Hokkaido and the prefectures alone are authorized to establish universities, higher schools and normal schools.

The main principles regarding the nature and objects of schools, their scholastic terms, curricula, organizations, entrance qualifications, qualifications for the teachers, equipment, means of meeting the expenditure, and tuition fees are prescribed by Imperial Ordinances. The establishment of schools by public bodies or private individuals must be approved by the local supervising authorities, which also exercise control to a certain extent over their methods of education and finances.

Religion is, on principle, excluded from the educational agenda of schools. In all schools established by the Government and local public bodies, and in private schools whose curricula are regulated by laws and ordinances, it is forbidden to give religious instruction or to hold religious ceremonies either in or out of the regular curricula.

Education in the colonies comes under the control of the colonial governments, and the military schools belong to the War and the Navy Departments, while there are some technical schools which come

under the supervision of other Departments. But with these exceptions, it may be safely said that the Minister of Education has charge of all matters relating not only to school education, but also to what may be termed social education, such as art, science, literature and religion. He is assisted by the parliamentary councillor in the conduct of political affairs and in matters which are connected with the business of the Imperial Diet. The vice-minister assists him in the business part of the Department.

Of the affairs within the jurisdiction of the Department, those that are related to education, art, science, and literature are distributed respectively among the Bureaux of Higher Education, General Education, Technical Education, Social Education, School Books, and Student Control, and those pertaining to religion are under the direction of the Bureau of Religion. Those affairs which do not properly belong to any one of these bureaux are dealt with in the Minister's Secretariat. In addition there are school superintendents, who inspect schools and directly supervise educational affairs; supervisors of social education who direct and supervise social educational affairs; superintendents of compilation who compile and examine text-books; and supervisors of school hygiene who look after the sanitary conditions of schools. Various advisory committees with prominent men in and out of office as members are instituted to help the Minister of Education in matters of wider scope.

The Minister of Education is authorized to direct and supervise the Superintendent of the Metropolitan Police and the local governors in matters under his control.

The prefectural governors direct and supervise their subordinate of-

ficials and exercise supervision over the public and private schools, kindergartens and libraries within their jurisdictions. There is a Division of Educational Affairs in each prefecture which has control of matters relating to education. School inspectors and sub-inspectors in it inspect schools and conduct educational business directly.

The mayors of cities and towns and the heads of villages deal with affairs regarding elementary schools and exercise control over them. The mayors of cities, moreover, have authority to make recommendations to prefectural governors in the appointment of the principals and teachers of elementary schools. The municipalities have school boards to look after elementary schools.

School Education

As is shown in the following tables, Japan is well provided with schools, ranging from kindergartens up to universities. Almost all the elementary schools are controlled by public bodies.

Conditions are different when we come to secondary education, for which there exist a considerable number of private schools, and in the case of schools of the highest grade the private establishments quite outrange in number those under official control.

Only 17 out of the 46 existing universities were built by the Government, 5 by public bodies and the rest by private bodies.

The total number of schools in Japan proper and their enrolment in the last five years, 1928-1933, is shown below:

Year	Schools	Students
1928	45,793	13,408,971
1932	45,766	13,073,854
1931	45,898	12,847,730