

Kind of machinery produced	No. of mills	Total no. of employees	Males	Officials Females	Total
Surgical instruments	96	996	96	2	98
Surveying and drawing instruments	15	223	21	—	21
Registers, typewriters, etc.	23	936	101	9	110
Cameras, etc.	21	901	97	2	99
Machy. for illumination, elect. bulbs, etc.	356	11,242	880	63	943
Optical instruments	42	809	105	8	113
Glasses	15	283	17	2	19
Musical instruments	24	1,901	232	12	244
Gramophones	7	1,132	189	19	208
Arms	54	8,542	799	63	862
Locomotives and rolling stock	1,010	27,414	2,799	97	2,896
Shipbuilding	345	39,200	4,155	172	4,327
Ships' instruments	13	94	8	—	8
Aircraft	66	13,842	835	84	919
Safes	43	647	59	—	59
Gas instruments	36	498	42	1	43
Water-works' instruments	53	736	77	2	79
Valves, cocks, etc.	81	1,156	98	—	98
Fly wheels, gears, axles, etc.	106	1,996	251	7	258
Other machinery and instruments	765	14,621	1,463	35	1,498
Total	6,738	230,896	25,975	1,256	27,231

Kind of machinery produced	Operatives			Others		Total
	Males	Females	Total	Males	Females	
Surgical instruments	823	37	860	36	2	38
Surveying and drawing instruments	188	9	197	4	5	9
Registers, typewriters, etc.	746	24	770	40	16	56
Cameras, etc.	629	123	752	48	2	50
Machy. for illumination, elect. bulbs, etc.	5,358	4,631	9,989	163	147	277
Optical instruments	635	50	685	8	3	11
Glasses	189	74	263	1	—	1
Musical instruments	1,411	231	1,642	13	2	15
Gramophones	724	188	912	70	2	72
Arms	7,109	263	7,372	248	60	308
Locomotives and rolling stock	22,719	680	23,399	1,005	114	1,119
Shipbuilding	33,445	166	33,611	1,001	261	1,262
Ships' instruments	86	—	86	—	—	—
Aircraft	12,162	435	12,597	233	93	326
Safes	574	—	574	14	—	14
Gas instruments	432	20	452	3	—	3
Water-works' instruments	643	6	649	8	—	8
Valves, cocks, etc.	1,008	15	1,023	35	—	35
Fly wheels, gears, axles, etc.	1,625	29	1,654	76	8	84
Other machinery and instruments	11,481	210	11,691	1,361	71	1,432
Total	178,889	15,683	194,572	7,576	1,519	9,095

Imports of Machinery

The importation of machinery has decreased to a very marked degree in recent years. 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 depres-

sion 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 1929, and in 1931 it reached to the bottom. The latest two years are gaining again. (See Chapter XI.)

IMPORTS OF MACHINERY (unit ¥1,000)

Articles	1927 yen	1928 yen	1929 yen	1930 yen	1931 yen	1932 yen	1933 yen
Watches	7,273	7,900	6,869	4,388	2,161	2,853	2,094
Clocks and parts thereof	561	627	616	434	205	140	147
Microscopes, etc.	—	342	456	324	166	255	126
Ammeters, voltmeters, etc.	—	280	328	215	141	101	78
Wattmeters	760	693	907	867	401	211	99
Other meters	2,920	1,957	2,053	1,465	1,030	1,074	1,526
Electric batteries, and parts thereof	—	354	422	259	176	176	106
Surgical or orthopaedic instruments	713	403	484	388	277	311	156
Surveying and drawing instruments	—	667	449	349	422	363	812
Registers, calculating machines, typewriters, etc.	376	1,850	1,924	794	738	590	574
Scientific instruments	3,523	2,524	2,908	2,429	1,017	1,039	1,049
Cameras, and parts thereof	461	1,013	1,088	1,423	1,419	966	765
Gramophones, etc.	254	376	531	268	240	98	38
Musical instruments	905	929	940	576	375	296	185
Telegraphic and telephonic instruments	5,792	3,982	3,871	1,832	1,223	1,664	2,989
Other scientific instruments	—	—	—	—	—	1,681	2,140
Fire-arms	1,733	2,408	1,967	837	777	5,826	6,451
Railway carriages, etc.	1,443	2,091	1,420	234	132	74	47
Boilers	2,818	3,349	2,376	3,124	2,237	1,192	1,790
Locomotives, etc.	927	905	1,062	544	59	70	156
Steam turbines	1,241	244	825	1,024	695	182	58
Internal combustion engines (weighing not more than 200 kg.)	5,090	5,526	7,354	4,460	4,206	2,296	1,826
Internal combustion engines (weighing not more than 2,500 kg.)	—	5,108	5,224	3,897	5,486	9,507	13,954
Internal combustion engines (others)	—	2,207	5,535	6,119	1,237	667	366
Water-turbines and Pelton wheels	517	559	1,095	36	—	9	—
Dynamos, motors, etc. (weighing not more than 100 kg.)	7,030	1,813	1,926	1,491	1,126	1,405	1,372
Dynamos, motors, etc. (weighing not more than 5,000 kg.)	—	2,339	1,599	664	285	233	192
Dynamos, motors, etc. (others)	—	2,213	3,306	1,382	587	4	169
Transformers	—	1,015	658	354	162	111	64
Dynamos combined with motive machinery	1,186	349	1,325	1,199	161	47	112
Cranes	96	279	479	300	284	4	58

Articles	1927	1928	1929	1930	1931	1932	1933
	yen	yen	yen	yen	yen	yen	yen
Capstans and other winding machines	529	584	1,347	1,215	142	34	117
Gas compressors	1,637	1,979	2,530	2,024	642	809	629
Sewing machines and accessories	7,010	5,404	9,501	4,066	2,024	3,263	2,183
Pumps	1,512	1,241	1,883	2,017	740	370	726
Blowing machines	412	565	1,464	1,436	541	161	145
Hydraulic presses	123	329	133	227	106	6	4
Pneumatic tools and machines	570	1,030	981	453	264	276	235
Metal or wood-working machines	4,985	4,880	5,622	4,840	3,069	5,807	16,246
Spinning machines	10,294	10,431	14,486	6,365	3,515	7,998	3,529
Weaving looms	360	427	637	279	55	106	12
Tissue-finishing machines	391	292	411	375	161	342	116
Knitting machines	296	178	222	814	145	75	32
Paper-making machines	254	379	846	127	38	37	3
Printing machines	651	1,577	1,631	690	193	291	29
All other machinery	15,035	19,190	24,480	20,767	11,908	12,463	11,460

Shipbuilding

Present State

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 53,000 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 re-

duced the 1931 output to 84,004 tons and in 1932 to 58,763 tons.

The real cause of depression in the shipbuilding industry in Japan consists in the absence of control over supply and demand, and a too great productive capacity. The actual capacity is over 600,000 tons, while about 300,000 tons would be enough, and it is claimed that there will be no permanent recovery in the industry until it is rationalized and redundant yards closed down.

The industry, is mainly controlled by the conditions of the country's own marine transportation business, or the policy of the Government.

The business in 1933, however, showed a little recovery and the total tonnage for 1934 is going to reach over 200,000 tons.

Imports of Old Vessels

1923 was the year in which the demand for imported old vessels was heaviest. This was due to the fact that the movement of cargoes in that year was very active on account of the reconstruction work necessitated by the great earthquake of that year. Of late years, old vessels imported for carrying purposes have decreased, while those to be used

for breaking-up and scrap have increased. In 1930, of the 5 vessels, totalling 10,766 tons, imported, all but one, which was transformed into a crab-canning vessel, were broken up. In 1931, this tendency was accelerated, and was further strengthened through the lower value of sterling caused by Great Britain's going off the gold standard in Sep-

tember. Of 54 vessels, 273,297 tons, which were imported in that year, 28 vessels, 133,741 tons were imported after September. Japan did not go off gold until December of that year. In 1932 there were 92 shipbuilding mills and the statistics on the various phases of the business follow:

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

End of	Officials	Technicians	Workmen	Others	Total
1923	2,428	3,205	98,445	1,980	106,058
1924	2,436	3,459	96,199	2,355	104,359
1925	2,315	3,323	81,920	2,785	90,243
1926	2,507	3,393	86,391	2,192	94,223
1927	2,281	3,380	93,807	2,142	101,610
1928	2,628	3,664	91,237	3,110	100,439
1929	2,546	3,376	49,855	3,762	59,539
1930	2,224	3,092	39,036	3,675	46,937
1931	2,053	2,805	33,440	1,297	39,514
1932	1,832	2,495	33,511	1,262	39,200

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	53,693	65	90	101
" " Dec. 1923	42,230	52	83	93
" " June 1924	43,985	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	32,977	40	75	84
" " " 1931	32,449	40	75	84
" " " 1932	32,511	41	75	84

VESSELS OVER 100 TONS LAUNCHED IN JAPAN

Year	No.	Tonnage	Index (1919 as 100)	Year	No.	Tonnage	Index (1919 as 100)
1919	356	674,479	100	1927	35	53,290	8
1920	198	469,108	68	1928	53	112,583	17
1921	81	227,792	34	1929	79	167,365	25
1922	71	73,243	11	1930	69	154,231	23
1923	57	76,784	11	1931	49	84,004	12
1924	45	72,808	11	1932	65	58,763	8.7
1925	39	55,949	8	1933	63	72,559	—
1926	32	52,922	8	(Nov.)			

TONNAGE OF OLD VESSELS IMPORTED

Year	No.	Tonnage	Year	No.	Tonnage
1921	26	160,079	1928	29	179,109
1922	20	118,331	1929	25	122,429
1923	67	308,007	1930	10	84,973
1924	20	110,104	1931	54	273,399
1925	14	70,275	1932	—	—
1926	43	261,019	1933	2	—
1927	37	173,410			

Aircraft and Automobile

Aircraft

Introduction Captain Tokugawa was the first pilot to fly a heavier than air machine in Japan. This was in 1910, and since then, aviation has been carefully studied by the Army, Navy, and civilians alike. In 1923, the Aviation Bureau, which had been under the Army Department, was transferred to the Department of Communications, and arrangements were made for the control, protection, and encouragement of flying. The manufacture of aircraft was commenced in the Army and Navy arsenals and, furthermore, many 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 The manufacturing of aeroplanes in Japan is somewhat backward when compared with other countries. Dr. Ichita Kishi, a physician who was, however, extremely interested in aeroplanes, and seeing how things stood, constructed at his own expense various workshops in his own residence in 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. Mohel Ishikawa and Seibei Kawanishi. In 1920, the Aichi Tokai 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 manufacturing aeroplanes in 1922.

Present State of the Industry Aircraft manufacturing in Japan consists chiefly in making military and naval planes. Originally patents were bought from abroad and machines built according to these patents, but the art of manufacture has now greatly advanced, and recently both aeroplanes and engines of Japanese design are being built. The total output including planes and accessories in 1932 reached to ¥49,425,004 in value.

At present the number of aeroplanes used for transportation by private companies is comparatively small. The machines used are mostly old army, navy, or imported

planes, but large orders are shortly expected from air transportation companies, etc. The principal aircraft manufacturers in Japan at present are as follows:

Manufacturers	Capital	Articles manufactured	Location of factories
Mitsubishi Aircraft Co., Ltd.	¥800,000	Aircraft & engines	Nagoya
Kawasaki Ship Building Co., Ltd.	90,000,000	" "	Kobe
Aichi Clock Electrical Machinery Co., Ltd.	1,000,000	" "	Nagoya
Nakajima Hikoki Seisakusho	1,000,000	" "	Gumma
Kawanishi Aircraft Co., Ltd.	1,000,000	" "	Hyogo
Ishikawajima Hikoki Seisakusho, Ltd.	2,000,000	" "	Tokyo
Toyo Gas & Electric Co., Ltd.	6,000,000	Engines	"
Fujikura Kogyo Co., Ltd.	1,000,000	Balloons	"
Eikyo Seisakusho	500,000	"	"
Tokyo E. C. Kaisha, Ltd.	1,000,000	"	"

Protection and Encouragement Air services and aircraft manufacturing in almost every country have, since the War, been protected and encouraged in various ways, by the subsidization of mail and passenger lines and aircraft manufacturing, and by the training of aviators. Japan has not been behind in this, as the following statistics show.

Year	Private companies' budgets	Subsidies granted
1921	789	50,000
1922	222,471	20,000
1923	158,709	20,000
1924	256,587	20,000
1925	458,550	271,200
1926	575,028	371,200
1927	1,216,000	371,200
1928	1,757,400	396,200
1929	4,288,328	1,043,200
1930	3,299,098	1,200,000

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-aha, Ltd., and the Orient Automobile Co.

Imports With the rapid increase in the motor transportation of passengers and goods the importation of complete cars, chassis, and accessories increased tremendously. In 1914, imports amounted to only ¥500,000, while in 1929 it was ¥30,000,000, though, owing to the depression, it dropped to ¥20,000,000 in 1930, and to ¥14,400,000 in 1932.

IMPORTS OF AUTOMOBILES & ACCESSORIES

Year	Number of automobiles	Value yen	Value of accessories yen	Total values yen
1923	1,935	4,955,211	8,577,060	13,492,280
1924	4,063	9,772,851	12,418,877	21,186,123
1925	1,762	4,630,000	7,062,433	11,692,433
1926	2,362	5,824,835	10,897,666	15,722,501
1927	3,805	8,068,063	10,218,000	18,281,071
1928	7,873	18,770,653	18,474,167	32,244,822
1929	5,018	9,545,870	24,062,818	33,608,588
1930	2,591	4,896,922	15,178,000	20,173,000
1931	1,887	3,378,000	12,051,000	16,329,000
1932	997	2,894,000	11,927,000	14,821,000

Present State of the Industry Automobile manufacturing in Japan is still in its infancy. Though there were 90,000 automobiles in 1930, only 2,000 were Japanese made, the remainder being imported from America, Great Britain, France or Italy. The industry, in this country, is being carried on, except in one or two cases, as a sideline by companies making other kinds of machinery, and as it is thought by some of these that there might be a bright future for the small car they have commenced to manufacture them, while others are producing trucks and buses under the Military Automobile Subsidy Act. The present conditions of automobile manufacturing by these companies are as follows:

(a) **Passenger Cars.** So far, companies which are engaged in the manufacture of passenger cars are the Ishikawajima Shipbuilding Co., Ltd., Kwaishin-sha, Hakuyo-sha, the Jitsuyo Automobile Co., Ltd., the Orient Automobile Co. and the Mitsubishi Shipbuilding Co., Ltd. Some of these do both designing and manufacturing, others use some imported accessories, while the remainder are engaged only in assembling imported accessories. Every one of these companies set off with great hopes for the future, but they all have found it hard to compete with imported cars.

(b) **Trucks.** The manufacture of trucks developed under shelter of the Military Automobile Subsidy Act. Though the number manufactured is still small, the industry is running on a very solid basis and is likely to be the corner-stone of the automobile manufacturing industry.

When the Military Automobile Subsidy Act was passed and put into force in 1918, the Tokyo Gas and Electric Co., Ltd., the Kishi Machine Factory in Tokyo, the Okumura Electrical Machinery Co., Ltd., the Mitsubishi Internal Combustion Engine Co., Ltd., and the Kawasaki Shipbuilding Co., Ltd., began to manufacture trucks at once, but owing to the crudeness of the product, inexperience in management, and high production costs, and in spite of the subsidy only the Tokyo Gas and Electric Co., Ltd., was able to continue in production. The Ishikawajima Shipbuilding Co., Ltd., and the Dai Automobile Co., Ltd., both began to make trucks from about 1925.

At present the following three companies are engaged in the manufacture of trucks and buses. These companies are working on a very small scale and the cost of manufacture is, therefore, very high. If there were no subsidies from the Government they would be unable to exist. Moreover, as the subsidies are limited, being granted in respect

of only a certain number of trucks or buses made, the companies have little encouragement to produce more than the fixed number, though

their capacities are actually much larger. Some other means are thus being sought after to further develop the industry.

COMPANIES WHICH MANUFACTURE TRUCKS AND BUSES

	Capital yen	Location of factories	Kinds of truck or bus manufactured
Ishikawajima Shipbuilding Co., Ltd.	2,500,000	Tokyo City	Bomlds 1 kilo-ton truck " 11 " " " 2 " " " 4 " " 6 wheel bus
Tokyo Gas & Electric Co., Ltd.	6,000,000	Tokyo City	T.G.E. 1 kilo-ton truck " 11 " " " 2 " " " 8 " " 6 wheel bus
Dai Automobile Co., Ltd.	465,000	Tokyo Pref.	Dai 1 kilo-ton truck

Motor-Cycles

Many firms are engaged in the manufacture of motor-cycles, using mostly imported motors and conveying parts. Recently the manufacture of three-wheel motor delivery vans has developed at a great pace, most of the work, however, has been carried out in small scale factories.

Automobile Assembling Plants

It is cheaper, because of lower transportation charges and tariff duties, to import accessories and as-

semble them in the place of consumption than to import complete automobiles, and many firms are doing this assembling work, the chief of which, perhaps, is the Nippon Automobile Co., Ltd., which is successfully assembling "Hudson," "Essex" and other cars.

Foreign Automobile Companies

In order to develop markets in the orient, the Ford and General Motors, Ltd., have both established plants in Japan.

Companies	Location of mills	Authorized capital yen	Year established	Number of employees	Capacities per month
Nippon Ford Automobile Co., Ltd.	Yokohama	4,000,000	1925	400	50
General Motors Japan, Ltd.	Osaka	8,000,000	1927	650	80

Bicycle Manufacturing

History A bicycle was first introduced into Japan in 1881 by an Englishman. In the following year Mr. Masakichi Takahashi slightly improved the form of this bicycle and began manufacturing, but soon afterwards, for the reason of being dangerous to traffic, their use was prohibited by the Government. In 1889, an American brought a bicycle with

him from America. This was used as a model by Mr. Eitaro Miyamoto who began their manufacture, but the cost was so high that he was soon obliged to close down. 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 Mr. M. Takahashi again started manufacturing, this

time, as bicycles became very popular, to be successful.

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.

Conditions Suitable for Bicycles. The bicycle now manufactured in Japan is perhaps the cheapest in the world. Conditions in this country are well suited to the use of this vehicle and with increased demand it has become possible to produce in large numbers at a considerably reduced price. 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 are naturally skilled.

PRODUCTION OF BICYCLES IN JAPAN

Year	No. produced	Value yen	Value of accessories Produced Yen
1922	—	12,374,210	—
1923	60,677	2,891,460	—
1924	92,172	2,751,270	—
1925	88,229	864,796	—
1926	41,832	1,112,021	—
1927	89,029	3,093,083	—
1928	123,588	3,328,990	—
1929	90,288	2,393,031	16,188,000
1930	136,983	2,799,331	12,206,374
1931	105,088	2,022,013	13,747,233
1932	63,968	1,313,748	20,588,803

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	1930	1931	1932
	yen	yen	yen
Tokyo	3,450,280	5,532,020	123,441
Osaka	5,250,332	4,666,797	223,123
Aichi	2,657,116	2,687,949	794,244
Hyogo	2,279,176	1,615,353	—
Ishikawa	717,665	357,023	—

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

Year	Imports	Exports
	yen	yen
1923	5,829,000	460,000
1924	7,078,000	745,000
1925	6,216,000	2,295,000
1926	5,923,000	1,039,000
1927	3,527,000	1,379,000
1928	1,634,000	2,337,000
1929	1,280,000	2,429,000
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

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. The rapid increase in production finally resulted in an over-supply of power, a factor which later became the weakness of the industry. Over-supply was further accentuated when the economic depression of the last few years brought about a decrease in demand for power.

Present Position of Hydro- and Thermal Electric Industry

According to investigations made by the Department of Communications during the years 1918 to 1923 at 2,822 points along various rivers, the amount of hydro-electric power which can be generated in time of

lowest water is 6,415,000 h.p., the maximum power at ordinary times 14,090,000 h.p. and the yearly average 11,933,000 h.p. Over one half of the above-mentioned points that can be profitably exploited have already been developed, and equipment for transmitting power for distances of 100 or 200 miles has been completed. But hydro-electric plants are installed with the normal flow of water as standard, so when the flow of water becomes low thermal electric power has to be resorted to and for this reason, thermal electric power plants have also increased in number.

COMPARISON OF ELECTRIC POWER GENERATED (in kw.)

Year	Hydro-electric	Thermal	Total
1907	38,622	78,288	114,910
1912	233,339	228,864	462,203
1917	511,000	364,474	875,474
1928	597,124	388,842	985,966
1929	710,920	422,314	1,133,234
1930	838,387	537,159	1,375,546

ELECTRIC POWER GENERATED IN VARIOUS COUNTRIES IN THE WORLD (unit kilowatts)

Year investigated	Countries	Hydro-electric power	Thermal power	Total
1930	U.S.A.	8,700,000	25,465,000	34,265,000
1929	Canada	3,522,000	154,000	3,676,000
1929	Germany	710,000	5,578,000	6,288,000
1930	Japan	2,512,000	1,086,000	3,598,000
1931	Great Britain	21,000	5,860,000	5,881,000
1928	France	2,045,000	4,936,000	6,981,000
1930	Italy	3,900,000	840,000	4,740,000
1929	Norway	1,590,000	100,000	1,690,000
1929	Sweden	1,250,000	295,000	1,545,000
1929	Switzerland	1,295,000	67,000	1,362,000
1930	Russia	—	—	1,273,000

The U. S. A. possesses the greatest hydraulic power in the world, about 60,000,000 h.p. as against 14,560,000 h.p. possessed by Japan. When this is compared along with the area of the two countries, the relative position changes, the U. S. A. has only about 20 h.p. for every square mile, since her total area is about 3,020,000 sq. miles, while Japan has

Year	Hydro-electric	Thermal	Total
1921	914,744	611,974	1,526,718
1922	1,070,060	700,118	1,770,178
1923	1,307,706	755,070	2,062,776
1924	1,474,357	763,146	2,237,503
1925	1,819,508	954,633	2,774,141
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	2,581,049	1,611,674	4,192,723
1930	2,797,637	1,601,677	4,399,314
1931	3,056,986	1,599,588	4,656,574
1932	3,106,930	1,827,181	4,934,111

Japan in the World's Electric Industry

The following table, which is prepared by the Department of Communications, shows the power generated in the principal countries of the world. In the generation of hydro-electric power, Japan occupies the fourth position, the first, second and third being in the order of the U. S. A., Italy, and Canada. The figure for Italy includes power generated for private purposes while that for Japan does not.

about 99 h.p. per sq. mile, her area being 147,000 sq. miles, Korea and Formosa being excluded. This illustrates that Japan is comparatively favoured in regard to water power.

Trend of Demand

For Lighting The demand for power for lighting purposes seems to be reaching saturation point for the

rate of increase has considerably slackened of late, but this may be partly explained by the general depression. Practically every house in Japan is lighted electrically, certainly almost every house in a community of even a handful of houses. That is why, in recent years, gains in the number of lighted households have been so small. Both number of lights per household and candle-power of the lights installed have been rising. At the end of 1927 the average house had 2.4 outlets for lamps and average of 11.0 candle-power. In 1922 the figures were 2.6 and 14.9; in 1927 they were 3.1 and 22.4; and in 1932 they were 3.3 and 30.9.

NUMBER OF ELECTRIC LAMPS WITH THEIR CANDLE-POWER IN THE SIX LARGEST CITIES IN 1932

(Unit in 1,000)

	No. of lamps	Candle-power
Tokyo	5,252	156,582
Osaka	3,528	64,997
Kyoto	1,422	39,666
Nagoya	454	22,965
Kobe	361	17,519
Yokohama	286	13,244
Total	11,509	215,183

The growth of the demand for power for lighting purposes in the country as a whole and in the various prefectures, in 1931, is as shown in the following two tables:

GROWTH OF DEMAND FOR POWER FOR LIGHTING

Years	No. of consumers	No. of lamps	Candle-power for these lights	Electric power for these lamps kw.
1923	9,305,218	21,297,210	334,162,292	420,014
1924	9,975,991	24,447,222	404,210,535	506,211
1925	9,872,052	27,320,749	461,073,570	574,258
1926	10,168,739	30,159,342	547,319,269	683,524
1927	10,347,225	33,322,961	605,604,245	756,169
1928	10,347,432	33,999,420	656,242,598	797,458
1929	11,170,318	35,203,253	704,324,262	863,546
1930	11,352,372	36,220,207	729,269,387	897,703
1931	11,446,539	37,413,282	762,246,343	959,144
1932	11,509,081	38,247,314	796,123,116	978,246

ELECTRIC LIGHTING IN THE VARIOUS PREFECTURES IN 1932

(Number of lights per 100 persons)

Prefecture	Number	Prefecture	Number	Prefecture	Number	Prefecture	Number
Tokyo	115.2	Yamanashi	67.5	Osaka	96.1	Hiroshima	62.5
Kanagawa	78.0	Aichi	68.9	Kyoto	110.3	Tottori	32.5
Saitama	41.2	Miyé	50.5	Hyogo	73.3	Shimane	41.3
Gama	44.9	Gifu	59.3	Nara	61.9	Okayama	55.5
Chiba	39.2	Nagano	51.0	Shiga	53.7	Yamaguchi	49.5
Ibaraki	30.3	Fuku	67.5	Wakayama	53.4	Kagawa	45.9
Tochigi	36.3	Ishikawa	61.7	Tokushima	44.2	Ehime	45.3
Shizuoka	32.1	Toysama	56.9	Kochi	44.2	Kumamoto	38.3
Nagasaki	34.2	Miyazaki	38.0	Niigata	43.2	Yamagata	38.3
Fukuoka	54.2	Kagoshima	25.3	Fukushima	32.4	Akita	29.7
Oita	51.8	Okinawa	6.0	Iwate	29.5	Hokkaido	36.3
Saga	44.0	Miyagi	36.3	Aomori	35.5	Average	57.7

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 private purposes, amounted, at the end of 1931, to 930,000 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

INCREASING DEMAND FOR ELECTRIC POWER

Year	Electric motors		No. of kw. supplied to other electrical equipment
	No. of motors	Horse-power	
1922	204,054	1,726,737	232,604
1924	248,756	1,828,235	274,367
1925	261,502	2,087,008	303,083
1926	299,956	2,202,020	341,081
1927	330,737	2,404,569	446,366
1928	412,156	3,050,390	685,054
1929	456,793	3,319,317	680,811
1930	497,757	3,577,410	864,095
1931	519,765	3,832,517	929,510
1932	563,602	3,834,462	951,412

NO. OF MOTORS (Classified according to Industries in which they are used, 1932)

Industry	No. of motors	Horse-power
Dyeing and textile	123,200	817,000
Mechanical	75,200	603,900
Chemical	49,100	742,000
Foodstuffs	147,100	337,000
Mining and refining	20,000	701,100
Others	151,000	633,500
Total	565,600	3,834,500

Manufacturing Industries
Using Electric Power

Electrical Machinery and Apparatus

the chief consuming industries.

Power Supply Companies After a downward movement which had lasted from 1928 to 1931, 1932 showed a turn in the number of power supply companies doing business. Companies actually operating jumped from 733 to 816 and those in business or soon to be from 773 to 850. Most of this gain was reported in water power generating plants.

POWER SUPPLY COMPANIES

Year	Generating		Buying	Total
	Water	Steam		
1928:				
Opened	449	53	263	765
1931:				
Opened	305	46	393	744
Unopened	5	7	15	27
Total	310	53	411	774
1932:				
Opened	366	59	301	726
Unopened	8	5	31	44
Total	374	64	412	850

Electric power is consumed, in addition to running electric motors and illuminating electric lamps, in manufacturing various electrical machinery and apparatus, electric bulbs, electric wire and cables. Electric machinery and apparatus were originally mostly imported from abroad, but a manufacturing industry is gradually developed in the country, the development during the War War being particularly remarkable and now large quantities of elec-

trical 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 industry, with an average 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 3.03 h.p. for 1932. Over that six-year period number of motors expanded 66 per cent. and horse power 59 per cent. and average size of motor has fallen 57 per cent. The decline in 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 output of electric equipment by Japanese companies in 1932 show little. That was a bad year for comparisons, as the first six months were depressed and the last six months were not sensationally good. It was not until early 1933 that trade became outstandingly better. These figures are not yet available.

PRODUCTION OF ELECTRICAL MACHINES AND APPARATUS

Year	Electric machines and apparatus	Electric bulbs	Electric wires and cables	Total
	yen	yen	yen	yen
1923	32,721,000	15,722,000	36,303,000	184,246,000
1924	33,784,000	19,000,000	37,738,000	194,331,000
1925	39,979,000	17,166,000	164,105,000	221,125,000
1926	105,202,000	18,104,000	113,351,000	234,359,000
1927	94,002,000	25,485,000	177,287,000	225,379,000
1928	125,205,000	38,317,000	169,742,000	251,354,000
1929	126,738,000	29,093,000	119,548,000	265,379,000
1930	104,340,000	23,215,000	73,725,000	201,280,000
1931	73,435,000	17,311,000	51,324,000	142,070,000
1932	75,310,000	15,377,000	47,281,000	141,158,000

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 commodities 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, IN 1932, OF THE
ELECTRO-CHEMICAL INDUSTRIES

Industry	Value of production yen
Carbonate of calcium, cyanamide and sulphate of ammonia	22,583,000
Phosphorus	680,000
Tin	1,290,000
Caustic soda	3,430,000
Electro-copper, gold, silver, and aluminium	63,242,000
Iron, steel and alloys	7,892,000
Electro-zinc and bismuth	3,018,000
Bleaching powder	1,318,000
Solidified oil	927,000
Others	3,095,000
Total	106,955,000

YEARLY PRODUCTION OF ELECTRO-CHEMICAL INDUSTRIES 1921-1932

Year	Production in yen
1923	78,971,000
1924	111,946,000
1925	118,404,000
1926	107,415,000
1927	130,740,000
1928	148,888,000
1929	152,011,000
1930	181,516,000
1931	94,221,000
1932	107,866,000

Electric Railway

The first electrification of railway was in 1904 on a part of the Kōbu Railway, but since then great developments have been witnessed. The Communication Ministry has not been looking with a great deal of pleasure upon the multitude of applications for electric transmit permits. There is a feeling that the time has come to stop expansion of the electric lines of the country and to en-

deavour 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 there were fewer than in 1926.

Part of this loss has been due to duplication of services, part to bus lines and part to the increased efficiency of the Government lines. Japan has more private railways than it needs. The growth of industry has been artificially forced. Between the ends of 1927 and 1932 paid capitalization and debentures and loans of the private railways rose ¥362,142,000, while fixed assets rose but ¥385,001,000. This means that only ¥23,759,000 of the apparent growth came from operating revenues. Profits have been declining. They promise to continue to do so.

Year	Length of line km.	Passenger car mileage km.	Passenger carried
1922	1,995	248,450,000	1,406,085,000
1926	3,490	272,605,000	1,926,420,000
1932	3,690	329,500,000	1,593,820,000

Demand and Supply of Electric Power

The demand and supply of elec-

tric power during 1921-1932, inclusive were as follows:

DEMAND AND SUPPLY OF ELECTRIC POWER (in kilowatts)

Year	Demand for power			Supply Capacity for generating power
	For lighting	For electric motors and electrical equipment	Total	
1922	401,650	1,460,937	1,862,586	1,779,178
1923	430,014	1,520,749	1,950,763	2,062,783
1924	556,211	1,634,500	2,190,711	2,237,568
1925	574,258	1,860,800	2,435,158	2,768,141
1926	688,584	2,052,327	2,735,911	3,202,614
1927	736,169	2,240,174	2,976,343	3,467,381
1928	797,458	2,060,644	3,758,102	3,822,054
1929	863,046	3,165,946	4,028,992	4,193,628
1930	887,708	3,582,842	4,420,545	4,399,314
1931	959,144	3,792,163	4,751,307	4,638,324
1932	978,846	3,811,694	4,790,540	4,933,061

To obtain absolutely correct figures allowances must be made in the above, for instance, in the case of hydro-electric power, the power given is that at the generating point and not that at the point of supply, therefore, the loss between the two points must be deducted. Moreover, the power for lighting is generated at night, while power for motors is supplied during the daytime and is diverted to electric light at night, hence some portion in the demand column in the above table is given twice and the actual demand must, therefore, be smaller than the figures given. At the end of 1930, the surplus supply of electric power was 723,000 kw. of which hydro-electric power was 166,000 kw.

Electrical Power Establishments and Increase of Power

In the eleven years 1922-32 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, though

recently, the number of establishments engaged in generating thermal electric power has decreased, because business of this description, which is run on a small scale, has become unprofitable. 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.

The year 1932 saw a gain of 302 plants using electricity. Most of the gain, 216 plants to be exact, was in private plants, but the private installations have been growing smaller and smaller with every year. In 1930 the average size of the 5,661 private plants was only 131 k.w. In 1931 the 6,010 private plants averaged 103 k.w. In 1932 6,225 private plants averaged 74 k.w. This means that electrification is spreading to the smaller factories. Between 1930 and 1932, number of plants generating their own power rose only from 2,275 to 2,499 and one may assume that 60, or almost half the gain, belonged to power supply companies.

INCREASE OF ELECTRIC POWER ESTABLISHMENTS (1922-1932)

Year	Establishments	Power supplied and power used for electric railways				Private and Government owned			
		Hydro	Thermal	Purchased	Total	Hydro	Thermal	Purchased	Total
1922	In operation	466	71	164	702	785	1,575	1,750	4,120
	To be operated	28	17	31	76	151	23	72	256
	Total	504	89	195	778	946	1,598	1,822	4,376
1924	"	438	58	228	724	758	1,469	2,020	4,197
	"	27	19	47	93	169	23	83	275
	"	465	77	275	822	927	1,492	2,103	4,472
1925	"	413	62	263	738	954	1,275	2,382	4,512
	"	24	12	40	76	205	19	93	317
	"	437	74	303	814	1,159	1,295	2,475	4,929
1926	"	428	50	344	732	901	1,195	2,558	4,755
	"	29	12	46	73	151	19	76	256
	"	448	62	290	810	1,052	1,212	2,734	5,011
1927	"	398	57	273	728	1,045	977	3,200	5,223
	"	19	5	43	67	202	27	123	357
	"	417	62	316	795	1,247	1,004	3,323	5,580
1928	"	405	52	263	720	1,064	954	3,358	5,315
	"	15	3	152	73	128	12	80	274
	"	420	55	315	793	1,242	966	3,438	5,589

UTILITIES

Year	Establishments	Power supplied and power used for electric railways			Private and Government owned				
		Hydro	Thermal	Purchased	Total	Hydro	Thermal	Purchased	Total
1929	In operation	371	49	312	782	1,070	884	8,088	5,542
	To be operated	14	0	38	58	151	19	188	308
	Total	385	49	350	840	1,221	903	8,276	5,850
1930	"	358	41	384	783	1,008	844	4,038	5,975
	"	6	5	35	46	138	18	116	267
	Total	364	46	360	770	1,231	857	4,154	6,242
1931	"	305	45	388	733	1,118	871	4,868	6,880
	"	5	7	28	40	116	40	275	431
	Total	310	52	411	773	1,234	911	4,638	6,732
1932	"	366	50	391	816	1,148	1,326	4,508	6,882
	"	8	5	21	34	98	37	153	288
	Total	374	54	412	850	1,246	263	4,661	6,870

Year	Establishments	Total			
		Hydro	Thermal	Purchased	Total
1922	In operation	1,251	1,647	1,924	4,822
	To be operated	190	40	108	347
	Total	1,450	1,687	2,027	5,164
1924	"	1,306	1,472	2,248	4,926
	"	106	42	130	368
	Total	1,402	1,514	2,378	5,294
1925	"	1,365	1,388	2,644	5,350
	"	220	31	133	384
	Total	1,586	1,369	2,778	5,734
1926	"	1,419	1,166	2,902	5,487
	"	183	81	122	384
	Total	1,600	1,197	3,024	5,871
1927	"	1,444	1,084	3,472	5,931
	"	221	82	171	474
	Total	1,665	1,066	3,644	6,405
1928	"	1,479	1,006	3,021	5,106
	"	197	20	135	352
	Total	1,676	1,026	3,156	5,458
1929	"	1,440	933	3,001	5,374
	"	165	25	176	366
	Total	1,605	958	4,077	5,640
1930	"	1,451	885	4,372	6,708
	"	144	18	151	313
	Total	1,595	903	4,523	7,021
1931	"	1,423	916	4,757	7,096
	"	121	47	147	315
	Total	1,544	963	4,904	7,411
1932	"	1,514	985	4,899	7,398
	"	106	42	174	322
	Total	1,620	1,027	5,073	7,720

TABLE SHOWING INCREASE OF CAPACITY TO GENERATE POWER (1921-1932)

Year	Developed Under construction Total	Water power	Thermal power	Total
	850,021	199,195	2,049,216	
	2,157,727	954,274	3,112,001	
1924	1,474,357	763,146	2,237,503	
	1,021,963	250,882	1,272,845	
	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	1,450,082	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	

ELECTRIC POWER

Year	Developed Under construction Total	Water power	Thermal power	Total
	1,793,270	146,892	1,940,162	
	3,983,621	1,678,595	5,662,206	
1929	"	2,581,049	1,511,574	4,092,623
	1,725,738	246,747	1,972,485	
	3,997,787	1,758,321	5,756,108	
1930	"	2,797,327	1,601,577	4,398,904
	1,226,454	275,466	1,501,820	
	4,023,781	1,877,043	5,900,824	
1931	"	3,056,036	1,599,532	4,655,568
	1,792,199	475,132	1,967,331	
	4,848,235	2,074,164	6,922,399	
1932	"	3,195,930	1,927,131	5,123,061
	1,428,310	699,000	1,927,310	
	4,624,240	2,626,131	6,750,371	

Suppliers of Electric Power

The following tables show the number of suppliers of electric power and the power supplied in 1932. Among the industries, electric railways are operating their business almost invariably on power purchas-

ed from power suppliers, among whom, 30% are themselves obtaining supplies from others. In the case of private, semi-private and Government-owned plants, most of them are buying about 65% of their total requirements from the electric power companies.

Kinds	Water power		Total	Thermal power		Total
	In operation	To be operated		In operation	To be operated	
Elect. power companies	344	3	347	55	3	58
Electric railways	2	—	2	1	2	3
Combinations of both	20	—	20	2	—	2
Total	366	3	369	58	5	63
Semi-private plants	11	1	12	3	—	3
Private plants	10	3	13	12	2	14
Government-owned plants	1,127	94	1,221	371	25	396
Total	1,514	98	1,612	442	32	474
Grand total	1,818	101	1,919	485	37	522

Kinds	Power purchased		Total	In operation	Total To be operated	Total
	In operation	To be operated				
Elect. power companies	308	3	311	508	14	522
Electric railways	159	13	172	153	20	173
Combinations of both	33	—	33	55	—	55
Total	499	16	515	716	34	750
Semi-private plants	13	—	13	27	1	28

Kinds	Power purchased		Total	In operation	Total To be operated	Total
	In operation	To be operated				
Private plants	307	29	336	339	34	373
Government-owned plants	6,188	124	6,312	6,225	233	6,458
Total	6,495	153	6,648	6,564	267	6,831
Grand total	6,994	174	7,168	7,398	302	7,700

POWER SUPPLIED BY DIFFERENT CLASSES OF SUPPLIERS (in kilowatts)

Suppliers of power	In operation	To be operated	Total
Power supply companies	2,638,327	963,438	3,601,765
Electric railways	3,978	8,175	12,153
Combinations of both	1,582,894	764,193	2,347,087
Total	4,275,199	1,735,806	6,011,005
Semi-private plants, private plants			
Government-owned	657,862	125,573	783,435
Grand total	4,933,061	1,865,379	6,798,440

POWER SUPPLIED, CLASSIFIED ACCORDING TO SOURCES OF POWER (In kilowatts)

Source of power	Power supply companies			Private, semi-private and Government plants		
	In operation	To be operated	Total	In operation	To be operated	Total
Water	3,013,728	1,311,544	4,325,272	92,202	114,766	206,968
Steam	1,246,601	424,189	1,670,880	514,673	12,192	526,865
Gas	14,780	73	14,853	50,987	2,615	53,602
Total	4,275,199	1,735,806	6,011,005	657,862	129,573	787,435

POWER SUPPLIED, CLASSIFIED ACCORDING TO SOURCES OF POWER (In kilowatts)

Source of power	In operation	To be operated	Total
Water	3,105,930	1,426,310	4,532,240
Steam	1,761,364	436,281	2,197,645
Gas	65,767	2,688	68,455
Total	4,933,061	1,865,379	6,798,440

Most Recent Development Japan's electric business once more saw the light of the day during 1933 after going through a steady improvement during 1932 from the worst depression of 1931. The revival of exchange rate, turn for the better in the demand and supply and conversion of loans into long-term ones and low interest rate during the latter part of 1933 served to quicken the business improvement. The general credit on electric power also picked up and prices of power shares went up perceptibly. Meanwhile, the control of power business was making headway through efforts of the Electric Power Federation as well as financiers interested in power concerns. Power concerns themselves

also joined their efforts and this helped largely to consolidate the power business. The Tokyo Electric Light Company and Nippon Electric Power Company entered into contract for mutual supply of power of their own generation in the Kwanto and Kwansai districts respectively. Nippon Power took the initiative in converting its debentures into open-end mortgage system and this was followed by the Ujigawa Power, Godo Electric and Daido Power companies. Decision of standard electric power rates was one of the contributing factors to business stabilization. On the other hand, the demand and supply of power largely improved in line with industrial activity. Surplus of power which has been heard

for the last several years ceased to exist and in the Kwanto the power supply was running short of the demand. Some power retailing concerns raised their rates. Water power generation plans, which were held off, began to be carried into effect. Nippon Power announced a plan for constructing its Kanetsuri Water Power Station and several other concerns started construction of their stations during the same year. Although no substantial increase of profits was observed, yet it was true business results of power companies improved during the second half of 1933, due to less burdens on the payment of interest for their funded borrowings from abroad, the conversion of their high interest rate debentures into low interest ones and reduction of interest rates on debts. Thus, the electric power business emerged from its severe ordeal lasted for several years.

Power Rates Power rates which kept declining for several years ceased to drop last year. Revised rate of 120,000 kilowatts of power between Daido Power and Ujigawa Electric was fixed at ¥103.54 per

kilowatt from ¥113.56 through intermediation of the Minister of Communications. The rate was higher than expected and this set an example that the power rate for a large contract leaves no room for a substantial reduction. Retail power rates for consumers showed signs of rising. A business agreement against reckless cutting of retail power rate was concluded among the Nippon Power, Ujigawa Electric, Hanshin Rapid Transit and Hankyu Rapid Transit companies for their duplicated business spheres. The minimum rate was fixed at 1.7 sen per kilowatt hour. A license system was adopted by the new electric business law. The Communications Ministry had to fix a basis of calculation of rate in connection with its adoption. The matter was submitted to the electric committee. A protest was raised by the Electrical Society and Electric Power Federation, but after all the matter was adopted.

Electric Business The electric business progress for 1933 follows, according to the Communications Ministry:

1933	New business	Business opened	New power stations	Merged or transferred
January	1	1	2	1
February	—	—	—	2
March	—	—	—	2
April	—	—	—	1
May	1	—	2	4
June	—	—	—	2
July	—	—	—	1
August	—	1	1	1
September	—	—	—	1
October	—	1	4	1
November	1	—	1	—
December	—	2	1	—
Total	3	3	11	15

According to the Ministry of Communications announced last year, the electric business statistics at the end of 1931 were as follows:

1. Number of those doing electric

business was 7,411, showing a 5 per cent. gain, or 351, over the end of 1930.

2. Total power generation was 6,523,815 kilowatts, of which that for

of ¥40,000,000, of which ¥15,000,000 was for Tokyo Electric Light; ¥5,000,000 for Daido Power; ¥2,000,000 for Ujigawa Electric; ¥1,500,000 for Nippon Power; ¥1,500,000 for Toho Power; and ¥10,000,000 for Oriental Development Company during six months. During that period, however, ¥3,500,000 worth of debentures was actually purchased for redemption, due to the rise of the yen. The term of six months was further extended by another six months. They raised the necessary funds to purchase these debentures in a possibly short period. The real amount purchased by these companies during 1933 is estimated at about \$15,000,000. The so-called gold loan problem was also discussed among these companies. All foreign loans are bound by indentures in

which it is provided that borrowers shall pay their foreign debts in gold dollar. When America went off gold, the yen rose and this meant alleviation of financial burdens of these companies in payment of their foreign debts. But if they fulfil their indentures faithfully and pay in gold, they are unable to receive the benefit of the rise of yen exchange. The Power Federation then adopted a resolution calling for payment of their debts in paper dollar instead of gold dollar. This was accepted by foreign creditors.

Electric business income has kept declining since 1930, the height of business, while expenditures have been rising, making the profit less yearly. Business income and expenditures for six years follow:

	(In ¥1,000)			
	Income	Expenses	Profit	Rate of profit to paid-up capital (in per cent)
1927	763,561	484,020	279,540	19.0
1928	813,663	530,783	282,880	9.4
1929	885,239	583,330	301,909	10.1
1930	896,643	640,798	255,845	8.7
1931	876,850	647,788	227,061	7.0
1932	850,834	663,837	186,996	9.5

Power consumption during this period went on increasing. It totaled 2,240,185 kw. for 1927; 2,948,143 kw. for 1928; 3,165,946 kw. for 1929; 3,522,843 kw. for 1930; 3,792,163 kw. for 1931; and 3,811,921 kw. for 1932. No official statistics are available yet for the 1933 con-

sumption, but the increase is estimated to be remarkable. The consumption is estimated at 4,721,950 kw.h. against 4,267,900,000 kw.h. for 1932. Power generation, both water and steam, for completed equipment and incompleting equipment for the same period, follows:

	Completed		Incompleting	
	Water power	Steam power (In kilowatts)	Water power	Steam power
1927	2,111,087	1,356,044	1,764,834	132,800
1928	2,290,351	1,531,703	1,603,270	142,800
1929	2,581,949	1,611,674	1,325,778	246,750
1930	2,797,637	1,601,677	1,585,454	275,400
1931	3,056,936	1,599,588	1,302,099	476,700
1932	3,165,930	1,827,131	1,426,310	430,000

The Big Five

Five leading electric 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.

STATUS OF 5 LEADING ELECTRIC POWER COMPANIES

(End of 1932, unit yen 1,000)

Companies	Head office	Authorized capital	Paid-up capital	Loans	Dividend
Tokyo Electric Light Co., Ltd.	Tokyo	329,592,000	329,592,000	386,441,280	2%
Nippon Electric Power Co., Ltd.	Osaka	130,955,000	115,214,750	103,906,766	1%
Toho Electric " " "	Tokyo	130,000,000	130,000,000	91,494,000	1%
Daido Electric " " "	Tokyo	175,000,000	130,972,250	77,287,663	4%
Ujigawa Denki Co., Ltd.	Osaka	92,500,000	92,500,000	92,992,447	3%

Control of the Industry

Owing to the ruthless competition among companies and the loss which it causes, control of the electric power industry has often been proposed. Through control better facilities for transmission of power, avoidance of double investments of capital, and rationalization of the industry through reducing costs can be effected. If control of the five leading companies can be effected, control of the remaining suppliers can readily be brought about. Many proposals have been made but the problem is so intricate and the interests of the companies concerned seem to be so divergent that a plan acceptable to all cannot be found. However, some of the difficulties were overcome in 1931, when the Union of Electric Power Companies was formed by the five companies. It is stipulated in the agree-

ment of the Union that competition shall be avoided as it results in a waste of money caused by double investment in facilities for transmission of power. A further clause of the 12 contained in the agreement deals with price fixing in given districts, etc. Through the agreement competition for customers among the five companies has been brought to an end, at least temporarily.

Capitalization and Profits

The total authorized capital of different companies in 1932 amounted to ¥4,174,000,000, of which the paid-up capital was ¥3,328,000,000. Debenture and other loan accounted to ¥2,494,000,000, while the total fixed capital was ¥4,822,000,000. 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 yen	Paid-up capital yen	Fixed capital yen	Debt and other loans yen
1922	2,124,047,000	1,597,346,000	1,288,462,000	415,225,000
1927	3,524,196,000	2,677,152,000	3,697,287,000	1,506,546,000
1932	4,174,738,000	3,328,000,000	4,822,175,000	2,494,000,000

TABLE SHOWING CAPITAL INVESTED, DEBENTURE AND OTHER LOANS
(Classified according to kinds of electrical industry at the end of 1932)

Kind	Authorized capital yen	Paid-up capital yen	Fixed capital yen	Debenture and other loans yen
Light and power	1,386,547,928	1,043,480,154	1,553,087,264	862,100,587
Electric railways	640,087,181	444,062,206	718,606,997	376,878,588
Combination of both	2,138,203,128	1,530,282,732	2,619,301,789	1,255,079,613
Total	4,174,738,237	3,326,834,092	4,889,175,020	2,494,049,768

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

PROFITS OF ELECTRIC INDUSTRY 1922-1932

Year	Paid-up capital yen	Profit yen	Rate of profit against paid-up capital %
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	217,240,000	11.0
1925	2,218,649,000	232,077,000	11.0
1926	2,433,588,000	270,331,000	11.0
1927	2,677,133,000	270,541,000	10.0
1928	2,868,717,000	282,880,000	10.0
1929	3,019,232,000	301,900,000	10.0
1930	3,180,810,000	253,800,000	8.0
1931	3,324,181,000	327,061,800	7.0
1932	3,326,834,000	195,907,000	5.9

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 ¥270,373,000. After the year the industry made great stride as the following figures show:

End of	Material Consumed		Supply		Consumption		
	Coal	Output	Amount Supplied to Consumers	No. of Consumers	No. of Lights and Burners	Number	Horse-power
	Metric ton	Thousand cubic metres	Thousand cubic metres				
1917	655,530	226,209	229,801	549,565	2,485,241	1,705	531.58
1918	785,161	230,892	261,371	505,401	2,864,394	1,531	434.50
1919	718,574	277,096	273,212	530,061	2,182,307	1,469	16.10
1920	727,705	293,414	294,544	492,214	2,195,732	1,184	11.43
1921	718,271	305,666	306,470	502,828	2,234,623	966	8.80
1922	761,262	345,240	347,261	552,367	2,353,674	867	8.47
1923	707,226	339,017	326,517	463,746	708,032	609	2.88

End of	Material Consumed		Supply		No. of Consumers	Consumption	
	Coal	Output	Amount Supplied to Consumers	No. of Lights and Burners		Number	Horse-power
	Metric ton	Thousand cubic metres	Thousand cubic metres				
1924	727,314	353,266	372,992	549,371	1,114,166	159	6,516
1925	781,971	354,392	408,312	583,187	1,265,188	407	6,548
1926	964,187	444,290	423,592	795,295	2,048,329	429	6,838
1927	1,035,552	496,319	494,911	953,138	2,234,722	358	6,704
1928	1,191,197	576,140	573,468	1,312,104	2,508,217	366	6,162
1929	1,243,137	629,972	563,337	1,462,223	3,057,487	265	6,128
1930	1,205,237	548,229	761,240	1,622,592	3,428,194	224	4,712
1931	1,229,369	611,222	740,183	1,716,342	3,704,599	192	3,297
1932	1,223,216	544,445	712,717	1,785,265	3,921,120	196	3,281

Note: * Aqueous Gas.

Present State of the Industry

The World War impeded the progress of the gas industry in this country, iron and coal became very expensive, and management became very difficult. To increase output was practically impossible. When the war ceased, there was quite a reversal of conditions, iron pipes declined sharply in price, so also did coal, and management became comparatively easy. The public began to realize the advantages of using gas, the demand for it increased and various gas companies became busy in enlarging their capacities.

According to the statistics taken in 1932, the gas suppliers numbered 100 in operation and 15 to be operated, while seven of the suppliers in operation were under municipal control. The paid-up capital, in 1932, was ¥409,220,000, the amount of gas supplied 712,717,000 cu.m. and the families using gas were over 1,785,000.

Gas Supply According to the latest

census, there are in Japan 2,232 cities and towns with populations of over 5,000. Of these, 500 towns are getting supplies of gas independently or from adjacent big cities, while the rest have no supply at all. But with the tendency of big cities to absorb outlying districts and owing to the existence of various plans for many towns to obtain supplies of gas independently, it is expected that gas production capacities will double in the near future. The following table shows the percentage of families using gas in cities and towns which are supplying gas:

Percentage of families using gas	Cities	Towns
Over 50%	7	2
From 45 to 50%	4	1
" 35 - 45%	2	1
" 25 - 35%	22	5
" 15 - 25%	35	11
Under 10%	5	1
Total	72	21

There are, according to the above figures, 80 cities, in which only 10 to 20 per cent. of families are using

gas. In Tokyo, 80% of the householders are consumers, in Osaka and Kobé 60% and 70% respectively. But when these are compared with

the figures of London, where 90% of the families use gas, there is room for development in the large cities, too.

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 rais-

ed 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 Kobé, 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 present, warehouses owned by various warehousing companies in different parts of the country number 96 in all, the total area covered being 758,667 tsuba. Classified according to the construction of the buildings, the area is as follows:

Buildings	Area in tsuba
Reinforced concrete	145,140
Other concrete	61,200
Brick or stone	152,327

Buildings	Area in tsuba	Value of Commodities	The value of commodities stored in these warehouses are as follows:
Storehouse type	38,674		
Iron frame and iron plate	56,848		
Covered with zinc sheets	192,192		
Wooden	87,347		
Total	775,167		

VALUE OF BALANCE OF STOCKS IN WAREHOUSES

(unit ¥ 1,000)

	1921	1930	1931	1932	1933
Balance at the beginning of the year	355,260	473,233	354,344	400,003	485,987
Balance at the end of June	545,471	508,941	458,917	546,023	629,965
Increase or decrease during the half-year	*309,789	130,708	103,573	145,990	143,978
* 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	1930	1931	1932	1933
Balance at the beginning of the year	21,125	24,125	21,270	22,200	25,500
Balance at the end of June	29,091	29,713	22,113	24,266	29,509
Increase or decrease in June over Jan.	5,776	5,588	843	2,066	*13,999
* decrease					

The business results of warehousing enterprises in 1932, which was

compiled by the Japan Warehouse Association, follows:

Commodities	(In ¥1,000)		
	Received	Delivered	Balance
Rice	¥249,078	244,127	104,448
Cereals	74,971	68,150	13,910
Sugar	208,287	181,917	68,225
Materials for food and liquors	74,548	75,730	19,074
Textiles	170,081	174,096	25,505
Cocoons	90,545	85,294	15,271
Cotton	244,822	207,882	62,122
Wool	98,122	34,120	19,182
Silk yarn and cotton yarn	1,003,204	992,214	115,882
Paper and materials for paper	21,048	91,880	35,000
Fertilizers	62,009	65,871	12,175
Iron and iron manufactures	44,611	13,080	14,120
Medicine, dyestuffs and paints	27,042	24,788	9,591
Others	28,317	97,870	28,440
Total	3,821,732	2,420,282	548,285

Value of Stores The value of commodities stored in warehouses in

principal places in Japan at the end of June each year were as follows:

(Unit ¥ 1,000)

Place	1928	1929	1930	1931	1932
Tokyo	74,786	77,466	71,427	87,844	74,694
Yokohama	51,619	51,667	173,786	108,764	102,354
Aichi and Miyé	45,614	44,718	43,421	39,746	33,979
Osaka	175,032	168,081	128,407	97,225	144,073
Kobé	99,652	116,069	124,768	111,186	134,327
Moji and Shimonoseki	20,037	20,205	18,284	16,656	21,079
Total	467,600	478,206	560,098	421,551	510,201
Others	52,191	55,197	48,848	37,066	36,480
Grand total	519,851	533,403	608,941	458,617	546,681
Tokyo	137,224	76,804	83,866	84,329	76,224
Yokohama	87,034	43,253	41,627	40,786	42,243
Aichi and Miyé	26,690	33,401	43,922	41,917	45,630
Osaka	164,865	214,192	220,407	171,898	184,513
Kobé	82,602	129,291	139,500	98,267	124,992
Moji and Shimonoseki	7,021	—	16,199	18,359	17,611
Total	504,986	496,641	545,027	355,551	491,518
Others	40,635	10,781	59,527	59,932	53,560
Grand total	545,471	507,422	604,599	515,483	545,387

The value of goods warehoused per tsubo on average is ¥604. But silk is a specially high priced commodity and if we exclude it, since it is kept in special warehouses, the value of goods per tsubo on average is about ¥466.

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 case which is not so 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. Therefore, 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

ed 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.

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, Kobé, Osaka and Moji	Tokyo
Toshin Warehouse Co., Ltd.	1909	15,000,000	12,500,000	Tokyo, Yokohama, Nagoya, Osaka, Kobé & Moji	"
Sumitomo Warehouse Co., Ltd.	1925	15,000,000	15,000,000	Osaka, Kobé and Tokyo	Osaka
Toyo Warehouse Co., Ltd.	1926	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	3,000,000	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	3,200,000	1,742,000	Yokohama	Yokohama
Naniwa Warehouse Co., Ltd.	1931	3,000,000	3,000,000	Osaka, Yokohama, Kobé and Shimonoseki.	Osaka

CHAPTER XXI

FOOD STUFFS

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 1900 they had increased to 38,000 koku, valued at ¥240,000. The year 1900 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 1912, 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 produc-

tion has not increased to meet the demand, although it has shown a considerable gain over the previous year, the result being, as the following tables show, heavy annual importations of wheat.

PRODUCTION OF DOMESTIC WHEAT AND ITS ACRAGE AFTER 1922

Year	Production koku	Acreage cho
1924	7,322,000	600,000
1925	5,121,000	608,000
1926	5,297,000	607,000
1927	7,160,000	673,000
1928	5,285,000	609,000
1929	5,322,000	614,000
1930	5,124,000	607,000
1931	5,405,000	501,000
1932	7,497,000	568,000
1933	7,000,000	518,000

QUANTITIES OF WHEAT IMPORTED

Countries from which imports were received

Year	Quantities in piculs						Total
	China	Kwantung Peninsula	U. S. A.	Canada	Australia	Others	
1923	35,342	13,684	2,222,124	426,248	1,730,459	004	7,222,414
1924	21,567	6,128	4,568,250	2,104,254	1,260,207	—	17,860,014
1925	8,406	2,478	2,220,278	1,513,264	3,354,245	2,208	7,027,044
1926	—	—	3,237,265	4,177,400	4,209,221	17,568	11,710,540
1927	261,200	62,268	2,608,611	2,270,210	1,262,207	4,073	7,074,089
1928	224,264	60,632	2,420,287	4,640,280	2,402,292	74,222	12,220,207
1929	224,264	60,632	2,420,287	4,640,280	2,402,292	74,222	12,220,207
1930	224	34	2,360,200	2,207,210	2,704,208	22	8,000,212
1931	22	8	694,210	2,207,225	3,354,204	3,279	12,000,221
1932	—	8	105,224	5,202,110	10,204,225	14	15,400,224
1933	—	8	6,227	1,274,226	4,202,221	2,125	5,200,220

The quantity imported from Canada in 1933 did not appreciably differ from that of 1932, but imports from the U. S. A. were drastically reduced while those from Australia increased in 1932 by 5,248,000 piculs, and decreased in 1933 by 3,672,000 piculs. On the contrary the U. S. A. was holding large stock of wheat with an idea of keeping up the price and protecting its farmers, the consequence being that imports from

that country were reduced by 3,249,000 piculs in 1933, as compared with those in 1932.

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	China	Kwantung Province	Hongkong	Dutch Indies	Asiatic Russia	Others	Total
1923	—	—	—	—	10,480	163,020	173,500
1924	79,008	60,875	—	3,833	30,155	12,875	187,646
1925	403,841	518,200	5,731	8,403	10,102	200,427	1,140,703
1926	907,565	653,947	1,490	48,536	4,413	76,612	1,692,563
1927	938,934	200,234	4,811	30,156	7,250	70,302	1,251,687
1928	1,763,896	536,245	6,155	24,538	23,647	17,846	2,372,327
1929	1,736,880	1,086,890	5,808	16,571	153,068	14,171	3,003,378
1930	1,337,437	878,057	13,236	21,595	229,625	18,808	2,498,758
1931	1,684,773	493,162	33,000	14,068	19,390	556	2,255,011
1932	1,049,163	2,372,327	—	5,998	—	27,393	3,454,881
1933	1,307,944	803,953	—	14,068	—	63,006	2,188,971

Exports in 1932 were the largest year by 1,443,000 piculs. In 1931 the Tsurumi mill of the Nisshin Seifun Kaisha, Ltd., the largest mill in the Orient, was destroyed by fire. The exports for this year then did

not reach the high figure of 1929. Aided by the fall in the yen exchange and the Tsurumi mill again coming into production, 1933 beat the highest record up to that time.

FLOUR PRODUCTION, CONSUMPTION, ETC.

(in bags)

Year	Production	Import	Export	Consumption
1923	30,038,000	921,000	470,000	30,569,000
1924	30,675,000	392,000	508,000	31,569,000
1925	36,483,000	205,000	3,101,000	39,789,000
1926	38,349,000	388,000	4,331,000	43,068,000
1927	39,701,000	897,000	3,379,000	44,377,000
1928	43,478,000	374,000	6,433,000	50,285,000
1929	43,139,000	314,000	8,271,000	51,724,000
1930	40,962,000	877,000	7,306,000	49,145,000
1931	42,088,000	226,000	6,080,000	48,334,000
1932	41,980,000	112,000	9,976,000	51,168,000

1933 Business Exports of Japanese wheat flour for 1933 amounted to 530,424,000 kin, worth ¥34,955,000, according to the Ministry of Finance. Of this amount, 331,869,000 kin, worth ¥21,808,000, was exported to the Kwantung Leased Territory; 142,703,000 kin, worth ¥9,305,000 to Manchoutikuo; 48,270,000 kin, worth ¥3,340,000 to China; and 7,582,000 kin, worth ¥502,000, to other countries. The amount gained ¥14,414,000 over 1932. About 80 per cent. of the shipments were made by the Nisshin Flour and Nippon Flour Mill Companies, the two concerns sharing the

export market almost equally. Exports to China fell sharply, due to the Chinese boycott against Japanese goods and other causes. In 1931 China took 61 per cent. of Japan's flour exports. Last year it took only 9 per cent. The loss in the China market has been made good by the gain in shipments to Manchuria. Another reason for the small shipments to China was heavy tariff imposed by the National Government in May. Since Manchoutikuo was founded Japanese flour has been gaining ground against American and Australian brands. More-

over, total demand for flour has been expanding, partly because the population of Manchoutikuo is rising due to immigration from Chihli and Shantung and partly because people have more money to spend. The average per capita consumption of wheat flour in North China is eight sacks a year, whereas that in Manchoukuo is only 0.8 sack. A turn for the worse has come over the shipments of Japanese flour to Manchoutikuo, as Australian flour was cutting price. The demand and supply of wheat flour for 1933, according to the Ministry of Commerce and Industry, follow:

	1933	1932
	(In 1,000 sacks)	
Production	36,866	34,758
Exports	14,321	9,976
Imports	39	112
Domestic demand	22,584	24,694

The 1933 production of wheat flour was the smallest figure since 1926. The wheat production in Japan for 1933 is estimated at 7,997,000 koku, the largest for many years past, due to encouragement policy of the Agriculture Ministry. This shows a gain of 1,500,000 koku over 1932. The value was ¥49,572,000, showing a drop of ¥5,176,000 from 1932. Wheat imported here for 1933 amounted to 8,519,469 kin, of which 6,593,321 kin was imported from Australia, 1,874,606 kin from Canada, 49,367 kin from the United States and 3,165 kin from others. The 1933 imports are contrasted to the 1932 imports of 12,443,433 kin. The Japanese wheat flour industry has marked a signal growth in recent years, but the amount of production did not go along the productive capacity. The 1933 productive equipment totalled 47,325 barrels as against the production of 36,866,000 sacks. Import wheat is decreasing, as domestic wheat is increasing, but

there will be no substantial decrease in imports, since export flour made of import wheat is increasing. The domestic consumption of flour went off last year, due to cheap rice price and comparatively higher flour price following enforcement of sales control by a cartel. Within the next three years the domestic wheat crop is expected to increase by about 3,000,000 koku a year through encouragement policy for increased production by the Government. Canadian wheat is mostly used here for bread, American wheat for mixing and confectionery and Australian wheat for mixing and high-grade confectionery. Japanese wheat is inferior to them in quality and is not suited to bread, but it is gradually improved. Although improvement is made in the quality of Japanese wheat, it will be impossible for it to be used without being mixed with foreign wheat. It has a thick coat, and when milled lacks lustre and is not suited to bread baking. It is used largely as material for making miso and soy sauce, indispensable foodstuffs for Japanese people. A distinctive feature of Japanese flour industry is that it is in an advantageous position to buy wheat on the most favourable market, either at home and abroad, depending on prevailing conditions. However, it is difficult to maintain a homogeneous quality of flour without a good deal of technical investigation and skill. The present import tariff on wheat is ¥2.50 and that on wheat flour ¥4.30 per 100 kin each, which were revised in June, 1932, being raised from ¥1.50 and ¥2.90 respectively. The tariff increase was done to encourage an increased wheat production at home.

Wheat Encouragement Policy The wheat production encouragement policy is taking effect. In the first year (1933) after the plan was approved

in June, 1932, the acreage was 616,000 chobu and the crop 8,006,000 koku, the former rising 21 per cent. and the latter 23 per cent., or 1,500,000 koku, over 1932. This year's acreage is estimated at 660,000 chobu, a further gain of 8 per cent. The wheat crop this year is estimated at 8,640,000 koku, on the basis of 1.3 koku per tan, and 8,480,000 on the basis of 1.27 per tan (a tan being one-tenth of a chobu). Domestic consumption of wheat is about 9,000,000 koku a year, of which 7,000,000 koku are consumed by flour

millers, 1,500,000 koku by soy sauce brewers and 500,000 koku go to miso makers and back to the farmers as seeds. The Ministry of Agriculture and Forestry says that this means Japan is likely to attain self-sufficiency in two years instead of three years, as originally planned. The Ministry says a further increase in wheat production will make Japan to be an export country. There are prospects several prefectures in the Tohoku District may turn to wheat, since rice is not ideally suited to the climate.

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 the Ogasawara and the Loochoo Islands were too small in area for developing cane growing on a large scale, the Government decided to encourage cane plantation in Formosa, as this Island was ideal both in temperature and rainfall for that purpose and

intended at the same time 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 purchasing 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 raw 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	4,891
1920-1921	4,212	1,578	4	15	19	5,830
1921-1922	5,877	1,259	72	15	8	7,229
1922-1923	5,923	1,111	103	10	21	7,224
1923-1924	7,536	1,400	216	6	58	9,218
1924-1925	7,992	1,396	167	6	148	9,622
1925-1926	8,332	1,417	190	9	152	10,101
1926-1927	6,852	1,299	236	5	209	8,653
1927-1928	9,667	1,428	343	9	181	11,540
1928-1929	13,155	1,507	343	10	164	15,182
1929-1930	13,508	1,311	424	11	345	14,599
1930-1931	13,297	1,314	380	10	600	15,644
1931-1932	13,287	1,298	361	15	642	15,603
1932-1933	16,481*	1,660	402	39	718	19,291*
1933-1934	10,561	1,823	402	—	720	—

* Figure includes 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, the market has been considerably disturbed, and grave cause for inquietude has been given concerning future developments.

TABLE SHOWING CONSUMPTION OF SUGAR

(Unit 1,000 piculs)

Year	Japan Proper	Formosa	Korea	South Sea Islands	Total
1918	7,375	410	—	—	7,785
1919	8,148	362	176	—	8,621
1920	6,722	235	149	19	7,114
1921	10,199	326	291	19	10,837

Year	Japan Proper	Formosa	Korea	South Sea Islands	Total
1922	11,280	317	175	3	11,775
1923	10,562	353	276	21	11,222
1924	11,162	351	209	58	11,780
1925	11,690	520	262	148	12,620
1926	12,674	551	315	152	13,692
1927	12,093	519	402	209	13,223
1928	13,035	651	322	181	14,199
1929	13,596	622	432	164	14,814
1930	12,949	688	350	313	14,300
1931	13,461	598	333	12	14,404
1932	14,356	671	350	34	15,411

Consumption in 1926 was about 13,000,000 piculs, about three times as much as that in the years preceding the Great War. For three years consumption was fairly steady, then, in 1929, it jumped to 14,815,000 piculs, to fall in the following year to 14,301,000 piculs, a great contrast to production. In 1932, consumption increased to 15,411,000 piculs but heavy stocks and surplus production are still a black cloud overshadowing the market as the situation is not relieved to any extent by exports, for the quantity imported has always slightly exceeded that exported until last year, 1932, when exports showed a slight excess.

EXPORTS AND IMPORTS

Year	Imports piculs	Exports piculs
1929	4,343,394	3,769,576
1930	4,569,149	4,101,411
1931	3,504,765	3,236,012
1932	671,299	1,474,792
1933	2,210,000	2,298,000

PRINCIPAL COUNTRIES TO WHICH REFINED SUGAR IS EXPORTED (unit picul)

Year	China	Manchouti-kuo	Kwantung	Soviet Union	Hongkong	India	Others	Total
1924	1,779,075	—	98,687	3,259	658	—	—	1,881,769
1925	2,175,020	—	189,941	20,741	2,349	—	—	2,388,051
1926	2,682,153	—	253,746	64,999	398	—	—	3,002,122
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	2,846	3,799,969
1929	2,379,585	—	547,469	93,354	168,130	31,259	1,040	3,220,837
1930	3,007,528	114,804	325,541	31,996	154,132	1,015	1,432	3,637,238
1931	1,895,667	88,922	370,810	57,433	208,996	333	—	2,622,311
1932	466,877	54,790	799,840	15,552	10,535	37,395	4,518	1,389,507
1933	901,529	97,153	905,951	81,212	—	—	76,840	2,052,681

Exports The two great sugar markets in the Orient are India and China, each of which has a population amounting to several hundred millions. Though per capita consumption is small, the former consumes about 4,000,000 tons, and the latter 1,000,000 tons. India produces sufficient to meet about 3/4 of her total requirements while China produces about one-half of the total consumed. Sugar refineries in Hongkong have mostly been supplying China, but Japan also is exporting refined sugar to that country.

The total amount of exports in 1933 was 2,298,000 piculs. A drop of 1,761,000 piculs was witnessed in 1932 and an increase of 537,000 piculs in 1933. This was owing to competition from Hongkong refiners, and because of the trouble with China over Manchuria.

Refined Sugar At present there are thirteen refineries in Japan proper and one in Korea. The total refining capacity is about 2,420 tons per day, so that if the average working days per year are 300, production will be about 11,500,000 piculs a year. Against this only a little over 4,000,000 piculs of refined sugar are produced, hence there exists a great surplus capacity. About ¥40,000,000 are invested in refineries and forms a burden on the sugar companies.

1933 Sugar Business The sugar production in Japan proper for 1933 set an all-time record with a total of 2,808,000 piculs, showing a gain of 2,000 piculs over 1932. The increasing trend has been kept up since 10 years ago, especially since 1929. Naturally, imports were small. Except 1932, when imports were extremely low, the 1933 imports were smallest since 1918 and totalled 2,210,000 piculs. Of this amount, Java crude sugar occupied 2,209,847 piculs and Hongkong sugar only 40 piculs. There was time when sugar imports into Japan totalled 7,568,820 piculs for 1926. With yearly increase of sugar output, imports have been falling year by year. Those brought from colonies also were smallest since 1928 and totalled 9,630,000 piculs in contrast to 14,043,000 piculs for 1932. Stocks at the beginning of 1933 were 3,384,000 piculs. These make a total supply of 18,032,000 piculs for 1933

against 18,878,000 piculs for 1932. Against the supply, exports were 2,298,000 piculs, exports to colonies 409,000 piculs, stocks at the year-end 2,818,000 piculs and the domestic consumption 12,507,000 piculs. The 1933 domestic consumption was smallest since 1923, when the total was 12,067,000 piculs. Last year's consumption showed a drop of 2,623,000 piculs from an all-time record high realized during 1931. This decrease was supposed to be outcome of the prolonged economic depression. The 1932-33 production of crude sugar in the Empire amounted to 13,522,896 piculs in contrast to the highest crop of 19,278,726 piculs for the year before. Of last year's production, cane sugar totalled 13,120,089 piculs, including 10,561,823 piculs in Formosa, 1,828,358 in Japan proper and 729,808 piculs in South Sea Islands, and beet sugar totalled 402,807 piculs, exclusively in Hokkaido. Of exports, nearly the same amount was exported to the Kwantung Leased Territory and China, the former amounting to 905,951 piculs and the latter 901,525 piculs. Sugar exported to Manchouti-kuo direct amounted to 97,153 piculs, that to the Soviet Union 81,212 piculs and that to other countries 76,840 piculs.

Various Sugar Companies

The following table shows capacities, standings, etc., of the principal sugar companies in Japan at present:

CAPITAL, CAPACITIES, ETC., OF SUGAR COMPANIES

Company	Capital		Capacity		Production of Sugar (1932-33) kin
	Authorized	Paid-up	Raw sugar short ton	Refined sugar long ton	
Taiwan Seito Co., Ltd.	63,000,000	43,080,000	11,814	430	321,622,637
Dai-Nippon Sugar Co., Ltd.	51,416,000	44,141,000	8,422	910	231,601,868
Meiji Seito Co., Ltd.	48,000,000	24,800,000	8,710	1,050	168,976,852
Ensuiko Seito Co., Ltd.	29,250,000	17,438,000	5,880	400	125,023,000
Niitaka Seito Co., Ltd.	28,000,000	10,750,000	3,284	80	38,626,840
Teikoku Seito Co., Ltd.	18,000,000	14,400,000	3,234	—	67,704,650
Hokkaido Seito Co., Ltd.	2,500,000	2,500,000	—	600	23,531,200

Year	Japan Proper	Formosa	Korea	South Sea Islands	Total
1922	11,280	317	175	3	11,777
1923	10,562	363	276	21	11,223
1924	11,162	351	209	58	11,781
1925	11,690	520	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	13,225
1929	13,596	622	432	164	14,815
1930	12,949	688	350	313	14,301
1931	13,461	598	333	12	14,405
1932	14,356	671	350	34	15,411

Consumption in 1926 was about 13,000,000 piculs, about three times as much as that in the years preceding the Great War. For three years consumption was fairly steady, then, in 1929, it jumped to 14,815,000 piculs, to fall in the following year to 14,301,000 piculs, a great contrast to production. In 1932, consumption increased to 15,411,000 piculs but heavy stocks and surplus production are still a black cloud overshadowing the market as the situation is not relieved to any extent by exports, for the quantity imported has always slightly exceeded that exported until last year, 1932, when exports showed a slight excess.

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PRINCIPAL COUNTRIES TO WHICH REFINED SUGAR IS EXPORTED (unit picul)

Year	China	Manchouti-kuo	Kwantung	Soviet Union	Hongkong	India	Others	Total
1924	1,779,075	—	98,687	3,259	658	—	—	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	221,351	77,591	4,539	2,346	3,799,969
1929	2,379,585	—	547,469	98,354	168,130	31,259	1,040	3,220,937
1930	3,007,528	114,804	326,541	31,996	154,132	1,015	1,432	3,637,298
1931	1,895,667	88,922	370,810	57,433	208,996	333	—	2,622,211
1932	466,877	54,790	799,840	15,552	10,535	37,395	4,518	1,389,507
1933	901,529	97,153	905,951	31,212	—	—	76,840	2,052,681

Exports The two great sugar markets in the Orient are India and China, each of which has a population amounting to several hundred millions. Though per capita consumption is small, the former consumes about 4,000,000 tons, and the latter 1,000,000 tons. India produces sufficient to meet about 3/4 of her total requirements while China produces about one-half of the total consumed. Sugar refineries in Hongkong have mostly been supplying China, but Japan also is exporting refined sugar to that country.

The total amount of exports in 1933 was 2,298,000 piculs. A drop of 1,761,000 piculs was witnessed in 1932 and an increase of 537,000 piculs in 1933. This was owing to competition from Hongkong refiners, and because of the trouble with China over Manchuria.

Refined Sugar At present there are thirteen refineries in Japan proper and one in Korea. The total refining capacity is about 2,420 tons per day, so that if the average working days per year are 300, production will be about 11,500,000 piculs a year. Against this only a little over 4,000,000 piculs of refined sugar are produced, hence there exists a great surplus capacity. About ¥40,000,000 are invested in refineries and forms a burden on the sugar companies.

1933 Sugar Business The sugar production in Japan proper for 1933 set an all-time record with a total of 2,808,000 piculs, showing a gain of 2,000 piculs over 1932. The increasing trend has been kept up since 10 years ago, especially since 1929. Naturally, imports were small. Except 1932, when imports were extremely low, the 1933 imports were smallest since 1918 and totalled 2,210,000 piculs. Of this amount, Java crude sugar occupied 2,209,847 piculs and Hongkong sugar only 40 piculs. There was time when sugar imports into Japan totalled 7,568,820 piculs for 1926. With yearly increase of sugar output, imports have been falling year by year. Those brought from colonies also were smallest since 1928 and totalled 9,630,000 piculs in contrast to 14,043,000 piculs for 1932. Stocks at the beginning of 1933 were 3,384,000 piculs. These make a total supply of 18,032,000 piculs for 1933

against 18,878,000 piculs for 1932. Against the supply, exports were 2,298,000 piculs, exports to colonies 409,000 piculs, stocks at the year-end 2,818,000 piculs and the domestic consumption 12,507,000 piculs. The 1933 domestic consumption was smallest since 1923, when the total was 12,067,000 piculs. Last year's consumption showed a drop of 2,623,000 piculs from an all-time record high realized during 1931. This decrease was supposed to be outcome of the prolonged economic depression. The 1932-33 production of crude sugar in the Empire amounted to 13,522,896 piculs in contrast to the highest crop of 19,278,726 piculs for the year before. Of last year's production, cane sugar totalled 13,120,089 piculs, including 10,561,823 piculs in Formosa, 1,828,358 in Japan proper and 729,808 piculs in South Sea Islands, and beet sugar totalled 402,807 piculs, exclusively in Hokkaido. Of exports, nearly the same amount was exported to the Kwantung Leased Territory and China, the former amounting to 905,951 piculs and the latter 901,525 piculs. Sugar exported to Manchouti-kuo direct amounted to 97,153 piculs, that to the Soviet Union 81,212 piculs and that to other countries 76,840 piculs.

* Various Sugar Companies

The following table shows capacities, standings, etc., of the principal sugar companies in Japan at present:

CAPITAL, CAPACITIES, ETC., OF SUGAR COMPANIES

Company	Capital		Capacity		Production of Sugar (1932-33) kin
	Authorized	Paid-up	Raw sugar short ton	Refined sugar long ton	
Taiwan Seito Co., Ltd.	63,000,000	43,080,000	11,814	430	321,622,637
Dai-Nippon Sugar Co., Ltd.	51,416,000	44,141,000	8,422	910	231,601,868
Meiji Seito Co., Ltd.	48,000,000	34,800,000	8,710	1,050	168,976,852
Ensuiko Seito Co., Ltd.	29,250,000	17,438,000	5,880	400	125,023,000
Niitaka Seito Co., Ltd.	28,000,000	10,750,000	3,234	80	38,626,840
Teikoku Seito Co., Ltd.	15,000,000	14,400,000	3,234	—	67,704,550
Hokkaido Seito Co., Ltd.	2,500,000	2,500,000	—	600	23,531,200

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 particularly 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	934,377
1929	895,945
1930	846,014
1931	797,544
1932	765,676
1933	1,003,081

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 increas-

ed 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 tendency 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 people seem to give a preference to beer, which contains a smaller percentage of alcohol than to saké. In the light of these facts, the domestic consumption of beer

may increase while the consumption of saké may decrease, in spite of the increase in population.

Exports and Imports Exports of beer in recent years are as follows:

Year	To Korea koku	To Formosa koku	To foreign countries koku
1912	9,303	7,807	13,255
1915	9,763	8,443	28,111
1918	6,278	9,025	112,216
1921	9,483	15,749	53,914
1923	20,248	18,868	23,710
1926	22,674	20,957	22,454
1927	23,935	20,407	37,807
1928	23,258	26,658	41,017
1929	32,378	27,508	89,156
1930	39,741	25,875	88,634
1931	26,929	22,086	86,637
1932	28,621	22,213	68,812

Exports of beer in the past have not been very encouraging. The sudden increase of exports in 1918 was due to Britain and Germany having to neglect their Oriental markets, but with the return of peace they again turned their attention to the Orient, and Japan's exports fell off correspondingly. One reason of the slowness in development of exports may be due to the fact that in China the taste of the people as a whole for beer has not yet developed. Exports picked up again in 1932, nearly doubling those of 1931, at 68,812 koku, due to good sales in North China and Manchoukiuo. Relegation in the U. S. A. effected good results for exports in 1933.

Ever since the industry was started imported beer has been practically driven out by domestic beer. Since 1912, imports have become so small that the figures have been cut out of the trade returns issued by the Department of Finance.

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.

Beer Industry at Present The beer industry was comparatively well stabilized before 1929, chiefly owing to the fact that by agreement production and sales of the various companies were reasonably well controlled and managed. But in January, 1930, the Nippon Beer Kosen Co., Ltd., broke away from the rest and since then such severe competition developed as to throw the whole industry into chaos.

During the competition, sales of beer steadily decreased. The year 1930 saw a decrease in consumption by 100,000 koku to be followed, in the next year, by a further drastic decrease. This decrease hit the companies very hard, as their capacities had been increased much beyond the point which domestic consumption and exports warranted. As even before the intense competition set in it had been found necessary severely to curtail production, now, with falling demand, the companies were more heavily burdened than ever.

In 1922, the total capacity of the

different breweries was 1,000,000 koku, but by 1931 this had increased to 1,670,000 koku. Actual brewing in 1922 was 765,000 koku; in 1928, 904,000 koku; in 1930, 800,000 koku; and in 1931, about 740,000 koku, bringing production back to the position it was in ten years before. The result was obvious. A further increase in the rate of curtailment was necessary, and this was increased to as much as 55% of total capacity, being as large as that of the cement, paper, steel, fertilizer and other industries.

In addition to curtailing production, the companies were forced to considerably reduce the selling price. From 1920 until 1929, the selling price was fixed at ¥20 per case of 4 dozen bottles, in 1930 it was reduced to ¥15, and in 1931 it became as low as ¥11.70. Drastic efforts were made, in every conceivable way, to reduce the cost of production but it was impossible to keep pace with the decline in price. In 1931, the profits of three major companies were reduced to ¥6,240,000 from ¥16,220,000 in 1926.

Japan's 1933 beer output set an all-time high mark. The lifting of prohibition bans in the United States with subsequent heavy shipments to Hawaii and the Pacific Coast, unusually large orders from the Dutch East Indies, as well as an increasing demand at home, caused a spurt in the brewing industry. Last year's output exceeded 1,000,000 koku, a jump of more than 30 per cent. over 1932. The largest output for the last 10 years, except 1933, was 915,078 koku for 1924. Production figures for 1933, compared with those for the preceding year's output, were:

Company	1932	1933
	(In koku)	
Kirin Beer	197,882	252,780
Dai Nippon Brewery	354,002	460,085

Company	1932	1933
	(In koku)	
Old Beer Kosen	122,254	180,809
Kotobukhya	23,980	30,714
Sakura Beer	69,329	79,143
Total	766,947	1,008,081

The total brewing capacity in Japan at the end of 1933 was 1,750,000 koku. One of the most noteworthy events for beer circles for 1933 was merger effected between the Dai Nippon Brewery Company and Japan Beer Kosen Company on June 23. Through efforts of the then Commerce Minister, Dai Nippon Brewery Company secured 64 per cent. of Japan's total beer output. The Joint Beer Sales Company was founded in August following the merger between the Dai Nippon Brewery and Kirin Beer interests. This company decided to raise the price of beer by ¥1 or ¥1.50 per box taking advantage of its monopolistic position in the industry. This came shortly after the resignation of Commerce Minister Baron Nakajima in February, since he reminded both Dai Nippon and Kirin not to raise any price when the big merger was effected last June.

Beer Brewery Companies There are now six beer brewery companies in Japan. A brief account of each is given below.

(1) **The Kirin Brewery Co., Ltd.** Of all the beer companies, the Kirin Brewery Co., Ltd., appears to be run on the most solid basis with a comparatively small capital. In 1884, Baron Yanosuké Iwasaki, Mr. Rokuichiro Masuda, Viscount Eiichi Shibusawa and Baron Takashi Masuda established the Japan Brewery Co., Ltd., in Yokohama, and Kirin Beer was put on the market, the propaganda and sales of which had been well undertaken by Mr. Isono of the Meijiya firm. In 1907, the Kirin Brewery Co., Ltd. was formed with a capital of ¥2,500,000 to succeed the Japan Brewery Co., Ltd.

The present status of the company is as follows:

	1930	1931	1932
Capital	yen 10,800,000	yen 10,800,000	yen 10,800,000
Paid-up capital	8,800,000	8,800,000	8,800,000
Profit	8,221,448	2,250,000	2,168,000
Rate of profit	89.8	27.1	27.0
Dividend	15%	11%	10%

The locations and capacities of the company's breweries are as follows:

Locations	Capacities koku	Production			
		1930 koku	1931 koku	1932 koku	1933 koku
Yokohama	140,000				
Kanazaki	160,000	218,046	194,082	191,882	252,780
Sendai	100,000				
Total	400,000				

(2) **The Dai Nippon Brewery Co., Ltd.** The Dai Nippon Brewery Co., Ltd., is the largest beer company in Japan. With a large capital and numerous breweries the quantity the

company brews amounts to 50% of the total production in the country. The present position of the company is as follows:

	1930	1931	1932
Capital	yen 80,000,000	yen 80,000,000	yen 80,000,000
Paid-up capital	50,000,000	50,000,000	50,000,000
Profit	10,005,818	2,280,000	2,125,000
Rate of profit	25.00	16.5	16.8
Dividend	18%	12%	12%

The locations and capacities of the company's breweries are as follows:

Locations	Capacities koku	Production			
		1930 koku	1931 koku	1932 koku	1933 koku
Meguro	200,000				
Azuma bashi	150,000				
Suitsu	200,000				
Sapporo	100,000	428,246	270,274	254,102	160,000
Hakata	100,000				
Nagoya	100,000				
Tsingtao	(80,000)				
Total	850,000				

(3) **The Nippon Beer Kosen Co., Ltd.**

The present position of the company is as follows:

	1930	1931	1932
Capital	yen 20,000,000	yen 20,000,000	yen 20,000,000
Paid-up capital	13,004,000	12,004,000	13,004,000
Profit	1,422,544	228,000	1,187,000
Rate of profit	10.5	11.9	10.8
Dividend	nil	nil	4.5%

The locations and capacities of its breweries are as follows:

Locations	Capacities koku	Production			
		1930 koku	1931 koku	1932 koku	1933 koku
Tokyo	100,000				
Handa	50,000	106,765	99,227	122,254	130,300
Nishinomiya	100,000				
Total	250,000				

Besides the above three large companies, there is the Sakura Beer Co., Ltd., with a capital of ¥4,000,000. The company has the whole of Kyushu Island as its operating area but it is not making any profit. There are also the Kotobukiya Shoten, Ltd., and Takasago Beer Co., Ltd., but neither is working on a profit making basis at present.

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	6,151,385	272,458,000
1923	11,175,024	405,712,482
1924	10,942,672	389,369,084
1925	10,454,270	322,431,068
1926	10,469,585	312,419,501
1927	9,812,516	298,788,816
1928	9,305,299	292,286,228
1929	9,038,146	291,716,100
1930	8,676,989	275,699,803
1931	7,435,590	232,122,205
1932	6,188,842	209,215,545

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 production of saké in Japan for 1932 amounted to 3,829,000 koku against 4,121,000 koku for the year before. The number of saké brewers for the same year totalled 16,265 in this country. Of the production, refined saké totalled most with 3,284,000 koku, shochu, or distilled spirit 445,000 koku, mirin or sweet saké 87,000 koku, white saké 6,000 koku and unrefined saké 5,000 koku.

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 Hyo-

go 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 Hiran-sul". 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 630,000 koku a year, of which sweetened drinks accounts for 80%, the rest being ordinary unflavoured aerated water or soda-water. Products 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	17,513	551,227
1926	384,741	238,940	23,195	646,876
1927	265,280	230,228	18,525	514,143
1928	219,425	246,844	16,470	482,739
1929	222,773	253,181	18,714	504,668
1930	176,835	213,529	17,122	412,486
1931 ¹	186,825	212,436	15,669	394,922
1932 (in litres) ²	Lemonade, etc. 22,954,172	Cider, etc. 78,947,750	Soda water, etc. 7,119,782	Others and Total 161,212,959

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 nat-

ural spring water and artificial carbonic acid.

(3) Those manufactured of filter-

ed 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 packed 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 coun-

tries. 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.

The export of canned provisions from Japan for 1933 amounted to 98,664,000 kin, worth ¥46,984,000, showing an increase of ¥24,207,000 over 1932. The low exchange rate was a potent factor to have caused the heavy gain in exports. Of the exports, 26,781,000 kin worth ¥17,838,000 was for the United States; 20,013,000 kin worth ¥13,136,000 for the United Kingdom; 5,292,000 kin worth ¥1,447,000 for the Kwantung Leased Territory; 1,870,000 kin worth ¥954,000 for Hawaii; 520,000 kin worth ¥328,000 for Australia; and 44,188,000 kin worth ¥13,281,000 for others. Production of canned crab by Japanese shore canneries in Kamchatka amounted to 300,000 boxes and that by floating canneries there amounted to 153,200 boxes for 1933. Due to divergence of opinion between the two sides, the former seceded the Canned Crab Joint Sales Company. According to the Canned Crab Association, canned crab exported from

Japan during last year amounted to 397,000 boxes, showing a 29 per cent. increase over the 1932 figure of 307,000 boxes. Of this amount, 155,000 boxes were shipped to the United States; 140,000 boxes to the United Kingdom; 64,000 boxes to France; 15,000 boxes to Belgium; and 23,000 boxes to other countries. One of the noteworthy incident in the floating cannery business for Kamchatka for 1933 was activity of the Japan Industry Company, which placed under its control the Kyodo Fishery Company, Japan Godo Floating Cannery Company, Japan Fish Net and Implement Company and Toyo Can Manufacturing Company, all interested in canned fish provision business. The export trade in tuna fish canned in oil has bright prospects especially for export business. The Ministry of Agriculture and Forestry conducted a series of investigation on the fishing in the water of Java and Sumatra. Last year a large amount of canned oil tuna was exported to the United States, where manufacturers of the same products started a vigorous movement against the import of Japanese commodities, taking advantage of the N. R. A. movement. Japanese Government see danger of reckless competition among exporters and a restriction is to be adopted on the export amount. Oil canned

tuna is produced almost exclusively by Shizuoka men. France last year proposed that imports of canned salmon from Japan be cut to a quarter of the former volume and that barter system be adopted for the remaining 75 per cent. It intends to impose a 25 per cent. exchange dumping tariff on imports of Japanese origin. The Japan Canned Salmon Export To France Joint Sales Guild fights to keep the 1933 quota of 400,000 boxes of canned salmon for 1934.

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 SALMON AND CRAB IN RUSSIAN WATERS

(Quantity in cases and value in yen)

		1927		1928		1929	
		Quantity	Value	Quantity	Value	Quantity	Value
Red Salmon	By Japan-Russian Fishing Co., Ltd.	508,000	14,732,000	778,000	23,353,012	560,814	16,522,605
	Others			43,731		63,236	
Silver Salmon	By Japan-Russian Fishing Co., Ltd.	55,000	1,375,000	32,525	853,550	40,235	—
	Others			1,619		1,041	
Chum	By Japan-Russian Fishing Co., Ltd.	87,000	723,000	1,408	15,498	39,228	430,200
	Others			—		4,711	

FOOD STUFFS

		1927		1928		1929	
		Quantity	Value	Quantity	Value	Quantity	Value
Pink	By Japan-Russian Fishing Co., Ltd.	—	—	375,680	4,281,144	82,280	900,470
	Others	—	—	32,048	—	7,758	—
King	By Japan-Russian Fishing Co., Ltd.	—	—	—	—	—	—
	Others	—	—	—	—	—	—
Crabs	By Japan-Russian Fishing Co., Ltd.	150,000	5,100,000	197,805	5,115,800	100,516	3,773,544
	Others	—	—	—	—	—	—
Total		800,000	21,090,000	1,878,001	33,518,994	917,528	22,404,000

		1930		1931		1932	
		Quantity	Value	Quantity	Value	Quantity	Value
Red Salmon	By Japan-Russian Fishing Co., Ltd.	449,241	17,926,567	411,147	11,640,937	418,164	13,771,868
	Others	330,188	—	143,170	—	713,091	5,469,149
Silver Salmon	By Japan-Russian Fishing Co., Ltd.	82,479	3,224,736	40,536	1,014,016	—	—
	Others	96,673	—	22,840	—	40,186	630,716
Chum	By Japan-Russian Fishing Co., Ltd.	11,121	314,847	182	460,112	—	—
	Others	23,862	—	57,332	—	—	—
Pink	By Japan-Russian Fishing Co., Ltd.	457,726	6,750,570	184,543	2,311,700	—	—
	Others	292,338	—	96,627	—	—	—
King	By Japan-Russian Fishing Co., Ltd.	—	—	5,177	141,900	—	—
	Others	3,316	166,320	1,021	—	—	—
Crabs	By Japan-Russian Fishing Co., Ltd.	56,369	2,091,074	53,396	1,795,696	—	—
	Others	11,063	—	10,736	—	—	—
Total		1,819,308	30,474,414	977,607	17,364,141	—	—

PRODUCTION OF CANNED PROVISIONS
IN 1932

(Quantity in kilogramme, value in yen)

Kinds	Quantity	Value
Canned meats	1,600,137	1,381,336
Fish total	9,391,278	5,330,402
Fruit total	2,288,503	1,023,979
Vegetable total	2,100,911	10,785,735

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	—	—	25	183	—	—
	Salmon	25	90	—	—	—	—	—	—
1923	Crab	3	20	—	—	96	557	—	—
	Salmon	10	41	—	—	1	3	—	—
1924	Crab	161	979	8	47	575	3,567	3	12
	Salmon	—	—	—	—	—	—	—	—
1925	Crab	293	1,888	5	33	1,186	7,508	10	60
	Salmon	12	48	—	—	—	—	—	—
1926	Crab	558	3,375	4	24	1,312	7,948	21	118
	Salmon	35	115	—	—	—	—	—	—
1927	Crab	877	4,554	21	101	1,515	8,288	28	176
	Salmon	419	1,274	—	—	—	—	—	—

CANNING

Years	Great Britain		France		U.S.A.		Canada		
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
1928	Crab	76,811	5,977	4,929	340	184,641	10,498	2,519	183
	Salmon	20,509	671	4,459	114	304	12	1	0
1929	Crab	41,330	3,713	6,081	533	113,192	9,621	3,036	254
	Salmon	73,924	1,797	71,822	1,785	46	1	—	—
1930	Crab	43,647	3,460	13,608	1,953	103,111	8,333	2,602	201
	Salmon	46,828	1,880	38,006	1,878	84	1	—	—
1931	Crab	43,701	3,623	13,409	975	93,697	6,760	1,733	127
	Salmon	33,173	949	119,059	2,196	2	—	—	—
1932	Crab	49,628	3,653	19,772	1,369	69,758	4,534	1,423	96
	Salmon	54,442	2,109	92,798	1,759	6,637	60	—	—
1933	Crab	69,347	6,774	39,114	2,332	76,397	7,335	773	69
	Salmon	86,522	5,415	180,969	4,463	115	2	—	—

Years	Australia		Others		Total		
	Quantity	Value	Quantity	Value	Quantity	Value	
1922	Crab	—	—	609	4,216	609	4,216
	Salmon	—	—	25	105	25	105
1923	Crab	3	20	503	3,349	506	3,369
	Salmon	—	—	4	20	4	20
1924	Crab	17	92	42	118	59	210
	Salmon	—	—	3	11	3	11
1925	Crab	49	250	116	855	165	1,105
	Salmon	—	—	124	31	124	31
1926	Crab	74	396	112	655	186	1,051
	Salmon	—	—	6	19	6	19
1927	Crab	103	461	236	1,135	339	1,596
	Salmon	6	13	23	76	29	89
1928	Crab	7,684	553	13,391	1,623	21,075	2,176
	Salmon	1,351	33	14,359	333	15,710	366
1929	Crab	11,609	953	17,284	1,438	28,893	2,391
	Salmon	1,908	75	32,169	778	34,077	853
1930	Crab	8,540	662	19,325	755	27,865	1,417
	Salmon	3,576	133	26,482	699	30,058	832
1931	Crab	314	24	9,955	649	10,269	673
	Salmon	643	16	26,568	536	27,211	552
1932	Crab	2,979	184	13,143	914	16,122	1,098
	Salmon	553	24	67,242	1,687	67,795	1,711
1933	Crab	2,519	219	13,297	1,550	15,816	1,769
	Salmon	2,213	168	54,632	1,242	56,845	1,410

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 Yukosha, 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 90% of the total foreign-style paper.

The 1933 Summary

Production The foreign-style paper business in Japan for 1933 picked up considerably. Prices went up, as domestic demand rose and business control was effected following an extensive merger of three large paper mill concerns. A plan calling for establishment of the Japan-Manchoutikuo Paper Manufacturing Company was advanced. The 1933 production of foreign-style paper amounted to 1,444,104,000 pounds, showing a 10.1 per cent. gain, or 132,789,000 pounds, over 1932. The sales amount totaled 468,570,000 pounds, with a gain of 53,812,000 pounds over 1932.

Exports Exports gained, as Japan acquired the Manchurian market. Domestic demand gained by 78,000,000 pounds, or 5.6 per cent., over 1932 amounting to 1,457,000,000 pounds in 1933. The year-end stocks went off to 106,824,000 pounds. The sales exceeded the production by 24,470,000 pounds. Export paper for 1933 amounted to 154,024,000 pounds, valued at ¥17,678,000, with a 16.1 per cent. gain in the amount and a 26.1 per cent. in the value over 1932, when exports were 132,604,000 pounds in the amount and ¥14,022,000 in value.

Imports Import paper for 1933 amounted to 104,330,000 pounds, valued at ¥10,310,000, with a 10.4 per cent. decrease in the amount and a 11.5 per cent. decline in the value from 1932, when imports were 116,475,000 pounds and the amount ¥11,651,000. The paper trade balance was resulted in an excess of exports involving 49,694,000 pounds of ¥7,377,000 in contrast to the 1932 balance of 16,129,000 pounds and ¥2,870,000 in export excess. As compared with an export excess for 1932, the value dropped by ¥19,000,000, but

the amount increased by 7,000,000 pounds.

Pulp Pulp consumed in Japan during 1933 amounted to 653,127 tons, including 397,731 tons of chemical pulp and 255,395 tons of sulphite pulp, showing a gain of 61,761 tons over 1932, including 48,948 tons of the former and 12,813 tons of the latter. According to the Forestry Bureau of the Ministry of Agriculture and Forestry, the 1932 production of pulp in Japan (Honsu, Hokkaido, Karafuto and Korea) amounted to 551,120 tons in contrast to the 1933 estimated output of 613,500 tons. The yearly output in the future is estimated at 700,000 tons. Import pulp for 1933 amounted to 159,974 tons, valued at ¥27,066,000, showing a 58 per cent. gain, or 58,806 tons, and a 76.5 per cent. gain, or ¥11,737,000, over 1932. The increase was the result of a heavier demand for rayon, paper, staple fibre and celophane manufacturing.

Rayon Pulp Demand for rayon pulp increased heavily. Out of about 40,000 tons of yearly demand, 90 per cent. is imported from abroad. A plan providing for production of 25,000 tons of domestic rayon pulp in Karafuto is advanced by the Oji Paper Manufacturing Company. In addition to the new Oji Paper Manufacturing Company formally incorporated on May 18 in accordance with a contract for merger on the previous year, the Taiwan Paper Business Company was established in July with a capital of ¥1,000,000, a quarter paid up. This concern makes pulp out of sugar cane stalks in Formosa. Products were marketed in November. The Manchuria Chemical Fibre Industry Company was planned for establishment to produce pulp in factories to be erected near Lake Chingpo in Kirin Province of Manchoutikuo. It will be capitalized at ¥5,000,000, which is to be

subscribed by Japanese and Manchoutikuo capitalists. In five years after its establishment the company is planned to produce 100,000 tons of rayon pulp a year.

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. Seven 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., and Nishino Paper Manufacturing Plant. 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 limitation 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	536	240	17,948	2,601		
1925	351,983	97,992	10,060	4,178	9,922	2,534		
1926	366,572	98,835	3,943	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	369,523	74,055	4,661	1,587	731	243	14,537	2,539
1931	321,711	62,416	3,360	1,120	4,074	1,137	9,567	1,839
1932	217,196	54,566	2,366	818	3,374	1,127	22,655	4,369

Year	Match paper		Cigarette paper		Paper "renshi"		"Hanshi"	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	1,951	585	15,485	3,920	2,196	573	2,495	6,768
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

PAPER PRODUCTION

Year	Match paper		Cigarette paper		Paper "renshi"		"Hanshi"	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1924	1,636	579	7,392	4,192	2,599	688	2,149	4,752
1925	732	212	7,564	7,382	1,818	453	6,927	11,640
1926	1,905	247	6,079	5,977	6,071	1,357	4,585	6,048
1927	812	176	4,210	2,452	7,624	1,892	4,394	5,349
1928	2,088	414	3,655	2,641	3,826	679	3,122	5,654

Year	"Minogami"		"Torinoko," and imitation paper	Board		Others and total
	Quantity	Value		Quantity	Value	
1922	475	11,62	142	89,821	10,156	132,904
1923	1,099	3,600	1,471	67,352	8,630	139,453
1924	471	2,490	2,904	102,756	11,571	150,440
1925	422	2,338	2,463	110,146	12,347	164,695
1926	269	1,932	4,842	114,962	14,151	179,630
1927	362	1,522	5,301	113,173	15,700	175,318
1928	194	883	7,278	135,149	17,194	182,476
1929	178	1,048	7,585	162,353	19,476	190,635
1930	128	845	4,368	150,215	15,469	154,574
1931	143	776	5,088	146,863	11,414	134,095
1932	163	954	7,120	139,253	11,646	132,170

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 ten years. All the figures except those in the last column were computed by the Oji Paper Mills, Ltd., and the basis for calculating per capita consumption was taken from the annals of the Government's Statistical Bureau.

CONSUMPTION OF PAPER
(Quantity in 1,000 kin)

Year	Production	Imports	Exports	Consumption	Consumption per capita
1923	794,005	113,556	68,455	839,106	13.9
1924	803,249	175,384	77,164	901,469	16.2
1925	986,752	96,919	96,300	987,371	15.9
1926	1,106,788	137,622	86,462	1,157,947	18.4
1927	1,191,074	112,555	92,484	1,211,245	18.9
1928	1,343,479	102,863	134,035	1,312,307	20.2
1929	1,451,526	81,084	140,289	1,392,321	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

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 development 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, Imports and Exports
This subject has already been dealt with in connection with the forestry industry, so that we touch but lightly on it here. 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. The 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. The following tables show the production of various kinds of pulps during past ten years.

PRODUCTION OF PULPS (Quantity in metric ton, value in yen)

Year	Ground pulp		Sulphate pulp		Others	Total
	Quantity	Value	Quantity	Value		
1923	—	¥11,429,443	—	—	—	11,429,443
1924	—	16,469,803	—	—	—	16,469,803
1925	—	19,188,475	—	—	—	19,188,475
1926	—	23,222,178	—	—	—	23,222,178
1927	—	20,950,680	—	—	—	20,950,680
1928	—	28,919,745	—	—	—	28,919,745
1929	78,724	7,487,816	100,596	13,134,680	825	20,623,321
1930	141,783	10,486,715	66,643	5,797,086	—	16,283,801
1931	97,910	8,201,064	23,233	2,523,543	988,761	11,713,368
1932	85,626	7,269,346	108,118	3,465,806	160,840	10,896,402

The amount of lumber used for the production of pulps was as follows:

AMOUNT OF LUMBER CONSUMED FOR PULP MAKING

(Unit: Ton)

Year	Lumber grown in Hokkaido	Lumber grown in Saghalien	Lumber grown in Korea	Lumber grown in Manchuria	Lumber grown in Japan Proper	Total
1930	304,419	304,419	14,221	9,801	124,459	655,319
1931	282,500	282,500	15,092	8,718	113,902	575,457
1932	259,294	259,294	15,178	11,704	113,091	562,824
1933	290,600	290,600	15,300	20,500	132,800	634,000

(Estimated)

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 relationship 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	78,144	645,673
1929	618,002	80,410	698,412
1930	625,587	79,107	704,694
1931	595,709	100,686	696,395
1932	551,120	101,169	652,289

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. With the rapid progress being made in the rayon industry in this country, the demand for rayon pulp has increased by leaps and bounds, and about 40,000 tons are consumed every year. Only two or three years ago, the initiative for production of this particular pulp in Japan was taken by the Karafuto Industrial Co., Ltd., and its output per year has already reached 15,000 tons.

Many of the rayon mills had no faith in home-made pulp at first, but as soon as a stability of quality and a guarantee of sufficient supplies was forthcoming they began to use as much as possible of the domestic product, especially has this been the case since the heavy depreciation in the yen almost doubled the price of imported pulp. Recently, the Oji Paper Manufacturing Co., Ltd., have also begun the production of rayon pulp, and it will not be very long before the Japanese rayon industry will become independent of foreign supplies, which are now mostly imported from Norway and U. S. A., though some are also bought from Canada, Finland and Germany.

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, super-

phosphate 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.

The 1933 Fertilizer Business

The year 1933 had a good start for chemical fertilizers with prices rising as the result of a sharp drop of exchange rate. Business was prosperous for the greater part of the year and all leading companies increased their dividend rates. According to the Ministry of Finance, chemical fertilizers imported during 1933 amounted to 1,555,962 tons, valued at ¥81,870,000, in contrast to 1,502,994 tons, valued at ¥61,993,000, for 1932. Of the imports, nitric soda totalled 84,349 tons of ¥3,855,000, against 23,381 tons of ¥2,049,000; sulphuric chloride 23,010 tons of ¥8,988,000, against 18,402 tons

of ¥2,111,000; phosphorites 692,554 tons of ¥15,374,000, against 550,561 tons of ¥11,097,000; bone dust 23,744 tons of ¥1,764,000 against 31,555 tons of ¥2,165,000; soya bean cake 531,043 tons of ¥33,635,000 against 619,441 tons of ¥28,471,000; and other fertilizers 1,555,962 tons of ¥81,870,000 against 1,502,994 tons of ¥61,993,000, all for 1932. Production of ammonium sulphate in Japan for 1933 amounted to 719,000 tons in contrast to 732,000 tons for 1932. Import ammonium sulphate totalled 107,000 tons, showing a drop of 10,000 tons from 1932. During last year the Showa Fertilizer Company increased its production of ammonium sulphate by 30,000 tons and the Sumitomo Fertilizer Company by 50,000 tons, but the Japan Nitrogen Fertilizer Company reduced its production by 20,000 tons following suspension of manufacturing at its Nobeoka plant. The 1932-33 year supply of ammonium sulphate was 1,058,000 tons, including production, imports and stocks, as against the demand of 1,028,000 tons. The shortage of about 140,000 tons, including 100,000 tons of ideal stocks for the next season, had to be imported from Germany and England. Production of superphosphorites for 1933 was estimated at 1,037,685 metric tons, nearly the same as the year before. Calcium cyanamide witnessed a good business for 1933. Its production totalled 157,135 tons against 107,139 tons for 1932. Sales totalled 136,000 tons and exports totalled 4,000 tons. Soya bean cake was less demanded last year, due to a heavier demand of other fertilizers.

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 1931 and 1932 imports were 412,000 and 559,000 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 increased 90,247 tons to 1,127,977 tons. Production during the past few years is reported by the Ministry of Com-

merce and Industry as follows:

PRODUCTION OF SUPERPHOSPHATES (In metric tons)

1920	408,971
1930	424,484
1931	898,587
1932	1,087,730
1933	1,127,977

Demand and supply are being kept in more or less harmonious balance, chiefly due to the production control scheme. A curtailment rate of 45 per cent. was effective August 1, 1933, and will remain in force until the end of July of this year.

Fluctuations in the market price of superphosphate during 1931 and 1932 were as follows:

PRICE OF SUPERPHOSPHATE, 1931-32

(The price is per bag of 7.5 kan, quality 19.5%, delivery at the factory.)

Year	1931	1932	Year	1931	1932
January	¥ 1.05	¥ 1.22	July	¥ 1.02	¥ 0.90
February	1.05	1.20	August	1.92	1.05
March	1.04	1.22	September	0.93	1.02
April	1.06	1.15	October	0.90	1.04
May	1.08	1.05	November	0.85	1.15
June	1.03	0.98	December	1.15	1.22

Sulphate of Ammonia The demand for sulphate of ammonia has steadily increased for years. Consumption in 1930 was 488,000 tons, in 1931 it was 530,000 tons and in 1932 it showed a remarkable increase to 630,000 tons. Imports in 1930 were 302,905 tons (value ¥29,612,000), in 1931 they decreased to 224,148 tons and in 1932 a further 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 732,000 tons and in 1933 to 719,000 tons. Japan, in this manner, has become self-supporting in sulphate of ammonia, and has be-

come very uneasy regarding over-production in the future.

In Europe and America, the International Nitrogen Conference failed to relieve various countries from the pressure of over-production, 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 109,315 tons to 713,550 tons. The previous year 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 almost nine times as great as that of 1920. Figures follow:

AMMONIUM SULPHATE PRODUCTION

	(In tons)
1924	108,713
1925	131,138
1926	147,000
1927	176,473
1928	232,425
1929	234,600
1930	265,826
1931	330,237
1932	604,235
1933	713,550

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 ammo-

nium 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 800,000 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 130,000 to 140,000 tons for the 1933 fertilizing year (August, 1933, to July, 1934), according to the Ministry of Commerce and Industry. Supply and demand figures follow:

AMMONIUM SULPHATE DEMAND AND SUPPLY

	(In 1,000 tons)	1932	1933
SUPPLY:			
Brought over from previous year		300	107
Estimated production		600	820
Imported		68	61
Supply total		1,058	997
DEMAND:			
Estimated consumption		934	906
Exported		18	32
Brought over to next year		107	0
Demand total		1,058	1,028

SULPHATE OF AMMONIA PRICES, 1931-32

	Domestic product per 10 kan bag *		Imported sulphate per metric ton	
	1931	1932	1931	1932
January	¥ 2.80	¥ 2.75	¥ 73	¥ 73
February	2.78	2.70	73	70
March	3.25	2.50	81	67
April	3.20	2.28	85	60
May	3.00	2.18	80	55
June	2.93	2.15	78	54
July	2.65	2.00	68	55
August	2.80	2.70	60	68
September	2.28	2.55	58	65
October	2.28	3.08	58	85
November	2.29	3.80	55	105
December	2.60	3.78	68	104

* 27 bags of the domestic product constitute a ton.

Cyanamide The consumption of cyanamide in 1931 was 168,448 tons (value ¥8,769,000), and the average consumption for the three years ending in 1931 was 192,107 tons (value ¥16,340,000). Production was

228,383 tons (value ¥14,169,000) and the average production for the three years, 185,861 tons (value ¥13,589,000). Since its price is now very low, there are almost no imports. Sales are made through a

joint sales association. The producers were very hard hit and suffered much loss when the price, following that of sulphate of ammonia, slumped so heavily. They were holding large stocks at time.

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

Companies	Sulphate of ammonia		Cyanamide	
	Production	Sales (metric tons)	Production	Sales
Nippon Chisso	114,000	97,500	30,000	34,000
Chosen Chisso	219,000	118,500	—	—
Denki Kagaku	* 73,000	66,000	* 37,000	47,000
Dai Nippon Artificial Fertilizers	47,792	46,653	—	—
South Manchuria Railway Co.	25,564	29,855	—	—
Yawata Iron Works	11,036	11,190	—	—
Daido Fertilizer	* 6,000	6,000	4,000	4,000
Hokuyetsu Water-Power	1,500	1,553	490	860
Mitsui Kozan	3,255	2,809	—	—
Wanishi Iron Works	1,564	1,781	—	—
Miike Chisso	5,799	1,782	—	—
Sumitomo Fertilizers	28,942	16,601	—	—
Mitsubishi Iron Works	2,425	2,220	—	—
Showa Fertilizer	73,018	46,486	2,455	28,520
Shinyetsu Chisso Hiryo	—	—	13,000	21,000
Hokuriku Electric Works	—	—	136	1,627
Chichibu Electric Works	—	—	210	3,653
Claude Type Chisso	4,801	4,266	—	—
Honkeiko Baitetsu	76	—	—	—
As by-product of gas making	* 20,000	* 20,000	—	—
Total	637,865	472,696	96,291	140,660

* Shows estimated quantities.

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, and of these, bean cake is the most important. Supplies and consumption for 1932 were:

	Production at home	Imports	Amount consumed	Value
	tons	tons	tons	yen
Bean cake	221,369	629,407	813,983	37,244,000
Rape-seed cake	79,117	60,686	100,717	5,457,000
Cotton-seed cake	19,809	21,718	22,548	1,379,000

The domestic production of bean cake is very small when compared with the quantity imported, the greater part of which comes from China and Manchoutikuo. 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.

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

ed into manure. The consumption of fish and animal fertilizers is as follows :

CONSUMPTION OF FISH AND ANIMAL FERTILIZERS

	Consumption in 1932		Average consumption for the three years ending in 1932	
	tons	yen	tons	yen
Herring guano	87,562	6,802,000	75,818	6,010,000
Sardine "	134,508	8,253,000	91,873	5,603,000
Dried sardines	16,449	827,000	10,039	476,000
Bone meal	30,744	4,249,000	63,433	4,291,000

Along with the slump in the chemical and vegetable fertilizer market, the animal fertilizer market also became very depressed.

The 1933 Market

Artificial fertilizers last year did not have the prosperity which had been expected. The poor position of the farmers forced a lower price for both superphosphates and ammonium sulphate, despite the fact that the decline of the yen kept out most imports from abroad. The reasons were the lower purchasing power and the anticipation that this year will bring a too-great expansion of production.

Prices were strong at the opening of 1933 but a reaction to speculative

purchases and other factors combined to weaken prices in the second and third quarters of the year, although sales control in superphosphates was a supporting factor.

Ammonium sulphate started the year at ¥3.35 in August, September and October. It returned to ¥3.50 in November but in the following month dropped to ¥3.45, at which level it passed the year. So far this year, affected by seasonal demand, it has been rising going to ¥3.55 in February and ¥3.60 in March.

Superphosphates followed a similar course, hitting the year's low in August and September at 88 sen but coming back to ¥1.17 in March of this year.

PRICES OF TWO LEADING FERTILIZERS

1933	Ammonium sulphate (In yen per ten kwan)		Super-phosphates (In yen per 7.5 kwan)	
	High	Low	High	Low
January	3.75	3.75	1.20	1.15
February	3.75	3.60	1.20	1.15
March	3.58	3.55	1.08	1.05
April	3.60	3.55	1.05	1.04
May	3.58	3.55	1.05	08
June	3.88	3.50	1.05	1.00
July	3.65	3.35	08	00
August	3.35	3.35	00	88
September	3.35	3.35	08	88
October	3.35	3.35	1.08	08
November	3.50	3.47	1.12	1.08
December	3.45	3.44	1.13	1.13

1934	Ammonium sulphate (In yen per ten kwan)		Super-phosphates (In yen per 7.5 kwan)	
	High	Low	High	Low
January	3.45	3.45	1.15	1.13
February	3.55	3.45	1.17	1.15
March	3.60	3.50	1.17	1.16

Last year imports of ammonium sulphate naturally went off, although value advanced due to the unfavourable exchange rate. Last year's imports totalled 108,449 tons worth ¥9,420,832, compared with 116,987 tons worth ¥7,035,354 in 1932.

Phosphate ores jumped from 534,922 tons and ¥11,097,459 in 1932 to 703,686 tons and ¥15,374,392 in 1933. Cotton seed cakes jumped from 21,178 tons and ¥1,329,461 to 65,789 tons and ¥3,829,692 in 1933. Nitrate of soda, sulphate of potash

and animal bones all advanced. Bone dust, bean cakes, rape seed cakes, chloride of potash and other oil cakes and fertilizers declined. Total imports last year (counting the phosphate ores imported for processing here) rose 107,060 tons or ¥82,568,672 last year.

Statistics

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

THE VALUE OF VARIOUS FERTILIZERS PRODUCED 1923-1932

(Unit ¥1,000)

Year	Fertilizers which requires a licence for production					Fertilizer not requiring any licence for production	Total
	Animal	Vegetable	Chemical	Mixed	Miscellaneous		
1923	29,329	37,930	50,720	29,760	140	21,000	165,879
1924	21,830	37,290	54,320	36,170	140	26,000	175,750
1925	26,509	41,660	64,380	45,940	170	26,000	204,879
1926	24,010	46,560	69,710	42,990	200	26,000	209,470
1927	21,139	37,089	70,423	41,820	165	26,000	196,555
1928	22,254	39,567	82,483	53,112	318	26,000	223,734
1929	19,519	43,521	87,284	50,116	217	26,000	236,737
1930	12,708	30,961	76,953	38,551	62	26,000	184,235
1931	13,092	24,083	61,557	25,910	85	26,000	150,727
1932	19,578	25,806	81,793	30,559	48	26,000	193,684

PRODUCTION OF VEGETABLE FERTILIZERS CLASSIFIED ACCORDING TO KINDS 1923-1932 (Value in ¥1,000)

Year	Bean cake		Rape-seed cake		Cotton-seed cake	
	Quantity tons	Value	Quantity tons	Value	Quantity tons	Value
1923	254,363	23,579	64,375	7,450	14,225	1,310
1924	214,950	20,810	56,263	8,010	14,138	1,400
1925	233,313	24,200	69,375	8,180	21,413	2,120
1926	270,413	26,600	103,313	11,070	29,325	2,590
1927	230,175	19,542	93,700	9,372	29,325	2,322
1928	243,750	21,068	79,425	9,093	32,250	2,322
1929	258,002	23,633	93,762	9,449	50,353	3,373
1930	232,727	16,505	99,433	7,367	43,459	2,221
1931	279,255	12,273	102,533	6,372	25,379	1,363
1932	221,369	11,726	79,117	6,516	19,399	1,204

PRODUCTION OF ANIMAL FERTILIZERS CLASSIFIED ACCORDING TO
KINDS 1923-1932. (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
1923	32,288	6,240	29,738	4,900	5,175	610	8,885	1,263	32,288	3,620
1924	32,100	5,080	40,163	5,800	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	1,388	128	16,038	2,003	33,038	3,493
1928	26,813	3,679	46,330	5,981	16,388	1,155	26,303	3,075	33,600	3,492
1929	19,013	1,687	55,256	5,461	12,494	865	20,252	2,370	37,352	3,691
1930	19,668	1,740	42,277	2,979	4,969	298	25,161	2,044	34,234	2,467
1931	22,114	1,290	77,100	4,208	8,759	300	44,140	3,014	28,908	1,790
1932	28,468	1,367	124,543	7,687	16,440	827	48,439	3,918	27,492	2,071

PRODUCTION OF CHEMICAL FERTILIZERS CLASSIFIED ACCORDING TO
KINDS 1922-1933. (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
1923	104,213	19,120	111,000	11,240	507,000	19,150	2,925	330
1924	108,713	18,310	121,688	12,240	593,325	22,320	713	80
1925	131,138	24,630	125,325	11,280	673,800	26,420	75	10
1926	147,000	23,080	140,663	11,960	786,263	28,870	563	60
1927	176,475	23,470	120,413	10,883	934,838	32,897	75	8
1928	223,423	29,622	159,938	15,051	926,175	32,236	600	71
1929	234,609	30,062	161,157	15,959	947,204	31,242	68	6
1930	263,826	23,936	228,383	16,959	957,159	29,830	207	24
1931	293,237	25,422	168,042	16,743	862,401	22,952	36	3
1932	450,663	36,126	199,583	19,660	1,041,497	29,219	203	34

Year	Muriate of potash		New fertilizers		Mixed fertilizers	
	Quantity	Value	Quantity	Value	Quantity	Value
1923	3,714	299	—	—	316,463	29,760
1924	4,302	394	—	—	413,153	36,170
1925	3,895	353	—	—	480,325	45,940
1926	4,332	420	—	—	493,538	42,990
1927	6,163	536	—	—	532,725	41,820
1928	5,208	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	8,573	764	104,321	4,871	616,828	30,659

IMPORTS OF PRINCIPAL FERTILIZERS 1923-1932 (in tons.)

Year	Bone meal	Bean cake	Rape-seed cake	Cotton-seed cake	Nitrate of soda	Sulphate of ammonia	Cyanamide
1924	43,163	1,115,288	90,188	42,525	40,425	163,397	—
1925	43,050	1,010,250	86,325	62,700	38,025	203,550	—
1926	36,600	1,266,632	98,363	57,938	63,975	205,025	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	380,658	14,757
1930	30,217	889,743	48,039	82,125	30,575	302,905	3,575
1931	37,119	1,032,680	54,380	64,072	34,994	224,148	406
1932	32,062	629,407	69,686	21,718	23,757	118,735	—

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	19,081	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	29,911	29,112	4,584	25,561	570,297
1931	38,510	28,470	13,564	—	25,751	412,016
1932	18,698	14,181	—	—	19,663	559,418

IMPORTS OF FERTILIZERS FROM THE COLONIES (In tons)

Year	Wheat bran	Fish guano	From Korea		Bean cake	Sulphate of ammonia
			Dried fish			
1923	41,813	2,813	2,925	—	78,113	—
1924	47,736	4,875	2,213	—	36,713	33
1925	49,875	10,725	1,536	—	10,313	—
1926	36,863	22,463	1,838	—	46,050	—
1927	41,138	33,638	638	—	20,925	—
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	86,283	505	—	17,960	53,260
1932	74,563	48,489	929	—	9,394	125,123

Year	Herring guano	Sardine guano	From Saghalien Island		From Formosa Fertilizers
			Cod guano	Small herring guano, etc.	
1923	3,575	—	975	1,163	301
1924	19,838	—	900	3,563	339
1925	19,425	—	825	1,275	6,405
1926	26,025	4,746	—	977	282
1927	30,000	7,095	—	5,403	4,130
1928	44,738	6,921	675	6,117	469
1929	42,794	5,217	371	8,163	441
1930	37,207	19,864	662	2,523	285
1931	65,964	9,369	277	5,758	374
1932	54,094	9,960	604	6,969	1,269

EXPORTS OF FERTILIZERS (In tons)

Year	Domestic products		Bone meal	Fertilizers imported from abroad (re-exports)			
	Various cakes	Other fertilizers		Various cakes	Nitrate of soda	Sulphate of ammonia	Sulphate of potash
1923	4,778	1,047	—	—	—	—	—
1924	9,774	222	—	1,825	524	—	—
1925	9,037	3,586	—	166	1,834	466	—
1926	13,452	1,090	24	33	464	4,202	—
1927	13,246	1,373	—	210	3,005	774	56
1928	25,513	2,158	7	3,307	4,418	2,431	88
1929	35,495	5,209	71	1,010	4,052	1,858	92
1930	10,558	21,463	30	1,252	2,672	551	59
1931	14,682	41,931	—	474	1,648	1,653	2,377
1932	22,492	43,960	—	259	1,052	—	5,011

EXPORTS OF FERTILIZERS TO COLONIES (In tons)

Year	Sulphate of ammonia	To Korea		Bean cake
		Artificial fertilizers, etc.		
1923	614	5,730	726	
1924	6,208	7,802	584	
1925	14,945	14,850	294	
1926	20,707	10,570	519	
1927	32,364	34,895	876	
1928	50,120	50,144	1,237	
1929	78,618	60,391	871	
1930	62,631	04,524	167	
1931	22,538	53,744	1,408	
1932	17,740	83,225	1,750	

Year	Bean cake	To Formosa				
		Superphosphate of lime	Sulphate of ammonia	Nitrate of soda	Sulphate of potash	Mixed fertilizers
1923	12	14,716	8,884	511	—	11,940
1924	467	27,235	16,685	245	—	20,745
1925	7	34,054	15,576	612	—	15,639
1926	26	33,776	9,481	340	—	9,976
1927	390	39,948	8,107	308	—	6,941
1928	2,028	41,993	7,792	280	1,456	10,986
1929	881	33,968	14,873	144	846	9,674
1930	1,136	35,095	21,241	152	780	12,068
1931	—	32,115	18,837	—	581	18,448
1932	—	41,803	49,491	—	877	22,892

CONSUMPTION: QUANTITIES OF FERTILIZERS SOLD ON THE MARKET (unit in ¥1,000)

Year	Herring guano		Sardine guano		Dried sardines		Bone meal	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1923	45,863	8,840	33,450	5,430	7,238	860	73,125	7,480
1924	51,938	8,900	41,838	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	67,013	11,220	49,238	6,880	10,375	1,080	73,888	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	6,090	16,388	1,150	69,675	6,900
1929	54,807	8,362	60,503	6,103	12,494	865	77,317	7,530
1930	56,875	5,474	53,141	3,821	4,960	293	64,455	4,744
1931	88,018	6,163	86,469	4,741	8,750	309	66,000	3,880
1932	82,562	6,392	134,508	8,253	16,449	827	59,744	4,340

Year	Bean cake		Rape-seed cake		Cotton-seed cake	
	Quantity	Value	Quantity	Value	Quantity	Value
1923	1,525,538	118,360	117,563	11,040	58,650	5,250
1924	1,290,788	107,300	128,025	11,790	45,975	4,160
1925	1,183,825	110,750	115,950	11,220	63,075	5,380
1926	1,510,088	133,220	142,463	12,430	58,333	5,260
1927	1,353,225	103,080	102,525	8,890	60,713	4,530
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	2,813
1932	818,983	37,844	100,717	6,457	22,548	1,379

Year	Superphosphate of lime		Nitrate of soda		Sulphate of ammonia	
	Quantity	Value	Quantity	Value	Quantity	Value
1923	491,363	18,320	66,488	8,140	240,338	42,250
1924	565,875	20,920	40,300	5,220	254,250	40,970
1925	636,263	24,570	37,388	5,060	303,718	51,910
1926	751,425	27,150	63,162	8,347	309,545	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	908,230	29,603	84,371	9,544	519,921	65,553
1930	1,222,064	28,495	27,751	2,888	488,000	45,923
1931	808,109	21,238	33,346	3,570	617,542	41,237
1932	960,497	26,534	22,705	1,513	618,125	46,541

Year	Cyanamide		Sulphate of potash		Mixed fertilizers	
	Quantity	Value	Quantity	Value	Quantity	Value
1923	111,000	11,240	7,800	870	299,438	27,760
1924	121,688	12,240	13,513	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	15,232	34,156	4,360	669,325	52,620
1929	175,914	16,502	53,334	6,557	767,513	59,187
1930	231,958	17,237	67,276	7,628	615,983	37,616
1931	168,448	8,769	34,988	3,940	528,175	24,697
1932	180,583	10,660	13,013	1,421	593,936	29,150

CONSUMPTION OF SELF-SUPPLIED FERTILIZERS (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
1923	—	120,000	—	36,000	—	90,000	—	70,000	—	316,000
1924	21,495	142,540	6,193	37,520	16,636	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	81,230	51,736	342,810
1926	21,587	138,610	6,431	36,160	16,044	85,450	7,943	79,800	52,004	339,820
1927	22,348	139,580	5,486	32,170	15,905	83,270	8,325	79,720	52,558	334,740
1928	22,018	131,270	6,168	34,040	16,251	84,100	8,127	76,880	52,564	325,290
1929	22,820	143,390	6,219	34,230	16,308	77,840	8,333	79,290	53,730	334,250
1930	23,506	122,690	6,133	29,130	16,236	61,830	3,942	68,320	54,817	232,470
1931	25,312	113,510	6,391	25,810	16,164	51,610	11,537	60,850	59,407	251,280
1932	26,931	121,780	6,513	25,720	16,012	51,500	9,474	61,270	58,931	260,270

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

Year	Fertilizers sold on the market					Self-supplied fertilizers	Grand total
	Manufactured under license	Manuf'd without license	Quantity imported	Raw materials for mfg. fertilizers	Total		
1923	133,370	27,000	157,800	47,849	275,321	316,000	591,321
1924	149,760	27,000	146,129	53,446	268,443	345,970	614,413
1925	178,670	26,000	155,882	50,897	309,655	342,810	652,465
1926	183,400	26,000	199,914	60,760	339,624	339,820	679,444
1927	170,585	26,000	150,754	57,520	289,819	334,740	624,559
1928	197,834	26,000	141,298	69,324	295,366	325,290	621,396
1929	210,750	26,000	156,597	77,255	316,889	334,250	650,299
1930	158,330	26,000	110,393	50,593	244,215	232,470	476,685
1931	124,727	26,000	74,023	39,437	185,818	251,220	436,598
1932	157,989	26,000	56,890	44,907	195,772	260,270	456,042

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
1924	23,144	1,130	408	45,085
1925	23,383	1,128	415	45,950
1926	23,609	1,124	429	46,127
1927	23,813	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	452	45,098
1931	23,334	1,072	428	43,918
1932	23,218	1,052	434	42,181

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	0
1914	3,506,526	2
1915	3,254,644	- 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	29
1923	11,664,295	12
1924	12,674,662	9
1925	13,882,198	6
1926	16,733,540	25
1927	18,803,080	12
1928	20,565,624	9

Year	Domestic consumption	Percentage of increase or decrease
1929	21,786,073	6%
1930	19,103,865	- 12
1931	18,087,580	- 5
1932	19,529,955	7

Present State of the Industry

The year 1933 was Golden Age for the cement business. Demand increased considerably, because of the progress of public works in connection with the farm relief, the inflation policy of the Government, the bustling animation of munitions industry and others. Orders kept coming from Manchoutikuo during the year and the amount totalled 313,337 tons, a large increase of 197,095 tons over 1932. Cement was also exported to Hawaii, China and the Dutch East Indies, but the export met a setback by restrictive measures on Japanese products adopted by these countries for the reason that they were dumped in these markets. The Japan Cement Export Society was established for export control. Production of cement in 1933 amounted to 4,781,030 tons, of which the quantity marketed in Japan totalled 3,976,994 tons, that shipped to Manchoutikuo 313,337 tons, exports 389,365 tons and stocks at the year-end 132,476 tons. Production curtailment was 55 per cent. in January and that in December 52 per cent. Exports to Manchoutikuo were fixed on the ratio of 62.5 per cent. for Onoda Cement and 36.5 per cent. for Asano Cement and others, as the result of a great trouble on the export amount among cement concerns. As Onoda Cement has been occupying a predominant position there since years ago, it obtained the largest quota of all. Onoda Cement also erected a slug cement factory at Anshan in Manchoutikuo and commenced operation early in 1934 and Asano Cement planned the establishment of a large

cement factory capable of manufacturing 110,000 tons of cement in Kirin Province there. Another plan providing for establishment of a large plant capable of producing 180,000 tons a year in Manchoutikuo was also advanced by Japanese and Manchoutikuo businessmen interested in the business. A plan calling for organizing an export guild has been progressing since 1931, but, affected by increase of tariff by Powers and anti-Japanese movement in China, the matter failed to be realized until cement companies were forced to organize it by a serious situation following a sudden enforcement of an import restriction on Japanese cement by the Dutch East Indian Government in June, 1933. The export guild was thus organized quickly by eight cement manufacturing companies, namely, Asano, Onoda, Yogyo, Hokoku, Tosa, Nippon, Oita and Ube, who fixed their respective amount of exports for the Dutch East Indies. Exports have been made on certificates issued by the Commerce Ministry. The same control was later enforced on exports for Hawaii, China north of Foochow, China south of Foochow and including French Indo-China, Malay Peninsula and Siam, British India, including Burma and Ceylon, the Philippines, Africa, South America and others. The export ratios fixed for these concerns were 4 per cent. for Nippon; Hokoku 4 per cent.; Onoda 25 per cent.; Yogyo 10 per cent.; Ube 12 per cent.; Asano 25 per cent.; and Tosa 2 per cent. The export ratios for various countries were 6.68 per cent. for North China; 22.46 per cent. for South China; 14.94 per cent. for Malay; 12.40 per cent. for British India; 35.60 per cent. for the Dutch East Indies; and 6.74 per cent. for other markets. While a heavy production curtailment of 52 per cent. was being enforced by cement con-

cerns at the end of 1933, many of them increased their productive equipment. At the beginning of 1933 the monthly productive capacity of cement companies was 615,360 tons, which increased by nearly 100,000 tons to 710,000 tons at the end of the year. The combined monthly productive capacity of cement of 16 companies belonging to the Japan Cement Association at the end of 1932 was 602,670 metric tons, which gained to 722,870 tons at the end of 1933. Their combined capacity at the end of 1934 is estimated to increase by 117,860 tons to 840,730 tons. Manchoukiuo is destined to be self-sufficient in cement supply in the near future with productive capacity promised to reach 560,000 tons. Of the 1933 total domestic demand for cement amounting to 3,281,391 tons, excluding exports, 364,505 tons were for railways; 159,038 tons for electric power; 202,095 tons for ports and harbours; 488,159,159 tons for roads and bridges; 441,812 tons for general public works; 215,146 tons for buildings; 47,232 tons for mining; 1,226,681 tons for petty orders; 100,538 tons for cement manufactures; and 20,240 tons for various other purposes.

CAPACITIES OF PRODUCTION AND ACTUAL PRODUCTION SINCE 1925

Year	Capacity of production (In 1,000 TMs)	Actual production (In 1,000 TMs)
1925	11,573	14,539
1926	18,095	15,610
1927	22,684	20,733
1928	24,087	23,473
1929	23,428	23,141
1930	34,765	22,680
1931	37,333	21,276
1932	36,388	21,301

Once again the cement industry is falling into its old trouble of over-production. Even though production curtailment has never once fallen

below a monthly average of 36 per cent. since 1929 and at the end of 1933 returned to 52 per cent., the producers are rushing plans for a further great increase in capacity. Since the beginning of 1934 there has been more than a slight tendency for prices to weaken and the position is by no means saved by the consideration that 1935 will see the end of the Government's great public works programme, which each year is taking cement equivalent to two months' domestic consumption.

However, all these future troubles notwithstanding, the industry is making money and probably will continue its mad career. For the latter half of 1933 its average profit rate was better than 30 per cent.

In the past year two-thirds of the industry's expansion programme has been completed and it will be finished by the end of this year. This appears to mean that, by the end of 1934 or the early months of 1935, the Japanese cement industry will have a capacity of 50,386,000 barrels a year with actual production less than half that figure. Figures of past follow

EXPANSION OF PRODUCTION CAPACITIES

(1,000 barrels)

Year	Production capacity	Actual production	Increase of production percentage
1925	10,025	18,030	25
1927	22,634	20,732	15
1928	24,068	22,473	6
1929	29,342	23,141	22
1930	34,147	22,040	15
1931	38,147	17,363	11
1932	39,079	21,020	6
1933	42,258	23,171	6

Last year saw much heavier demand for cement, for output increased 1,049,649 tons to 4,781,031 tons, a gain of 28 per cent over 1932. Domestic consumption, however, showed no such expansion, rising only

189,951 tons or about 5 per cent. to 3,981,391 tons. Unfilled contracts slipped off during the year. In the early months they were above 1,000,000 tons, dropped to 770,000 tons in November and ended the year at 870,000 tons. The following figures show the growth of cement output capacity:

CEMENT PRODUCTION CAPACITY (In metric tons)

	1931	1932	1933
January	509,000	551,830	515,800
February	509,000	551,600	516,700
March	520,600	551,600	520,110
April	527,700	551,600	520,110
May	526,800	551,600	523,470
June	525,500	551,600	539,830
July	525,500	551,600	544,670
August	525,000	551,600	544,600
September	548,100	577,650	523,110
October	548,100	577,650	527,070
November	549,370	577,650	709,470
December	550,150	562,670	721,870
Average	530,207	562,473	572,510

Heavier demand and a reasonable amount of market control kept the increased capacity from seriously breaking the price of cement last year. The official quotation remained at ¥1.20 a sack, although some sales were reported at ¥1.15. However, there was a downward tendency, shown by the decline in the Imperial Government Railway's contract price. For the 1934-35 fiscal year, now in progress, it was set at ¥1.03. This figure is generally taken as a basis for private contracts and there are fears that 1934 may see a generally lower level. Last year's price were:

CEMENT WHOLESALE PRICES (Per bag of 50 lbs)

Month	1931	1932	1933
January	¥1.20	¥1.20	¥1.20
February	1.20	1.20	1.20

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-ware." 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, 65 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, over-production 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. At present, pottery made for domestic use is not selling well, and the industry is suffering heavily from dumping.

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	7,099,845	12,357,677	76
1914	5,913,768	9,743,088	15,656,856	100
1920	31,452,252	31,388,065	62,840,317	401
1925	35,272,738	42,905,005	78,177,743	499
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	345
1932	22,937,076	42,325,776	65,262,852	345
1933	35,634,000	—	—	—

Factories and Workers

Number of factories and workers,

Prefecture	Total number of factories	Number of workers		
		Male	Female	Total
Aichi	1,948	11,636	5,246	16,882
Gifu	1,330	5,634	3,419	9,053
Miye	154	1,836	675	2,511
Kyoto	347	1,206	270	1,476
Saga	243	1,890	998	2,888
Osaka	41	634	48	682
Fukuoka	60	763	446	1,209

in 1932, follows:

Prefecture	Total number of factories	Number of workers		
		Male	Female	Total
Nagasaki	102	675	385	1,060
Ishikawa	519	1,251	333	1,584
Shiga	143	670	269	939
Hyogo	180	477	113	590
Yamaguchi	291	491	324	815
Others	1,206	3,326	1,993	4,319
Grand total	6,474	30,419	13,529	43,948

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

Countries	1914 yen	1919 yen	1928 yen	1929 yen	1930 yen	1931 yen	1932 yen
China	457,883	2,854,242	2,068,389	2,301,303	1,697,236	617,230	554,257
Kwantung Province	167,079	1,281,897	1,476,913	1,601,472	841,037	560,379	756,766
Hongkong	349,542	679,069	626,030	650,438	525,757	243,644	142,681
India	234,865	2,261,994	2,456,029	2,558,990	1,867,397	1,391,511	3,463,192
Straits Settlements	181,957	1,127,672	588,334	711,685	399,606	210,567	374,695
Dutch Indies	121,681	1,797,265	4,822,841	4,927,638	2,765,672	1,711,896	2,424,278
French Indo-China	46,562	—	350,845	27,654	31,913	18,150	36,221
Philippines	—	545,554	793,941	666,651	679,949	400,302	635,106
Great Britain	291,606	808,441	469,419	517,471	719,265	696,935	825,157
France	126,563	—	512,349	636,483	883,730	1,079,241	311,962
Germany	127,197	—	291,154	297,325	317,813	199,837	160,023
Italy	—	—	315,692	356,249	342,083	195,130	296,515
Holland	42,457	—	775,002	1,028,298	1,157,296	1,200,588	848,363
U.S.A.	3,183,273	6,055,512	13,973,166	14,500,806	10,820,851	6,634,241	6,441,464
Canada	121,262	780,452	1,420,106	1,550,021	1,391,598	1,139,426	1,317,285
Argentine	—	—	313,735	387,721	249,412	174,453	150,336
Brazil	—	—	441,943	415,378	140,702	79,515	118,207
Egypt	—	—	148,790	101,198	119,480	146,168	408,290
Australia	158,070	1,486,212	1,172,085	1,159,368	769,589	665,762	1,768,158
Others	303,171	2,951,525	1,886,905	2,466,553	2,049,690	1,942,375	1,962,292
Total	5,912,768	22,629,775	34,642,678	36,962,654	27,171,265	19,307,499	22,937,076

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. At present the depression is telling

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 glass ware 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, ¥9,124,532 in 1932 and ¥9,075,651 in

most severely in the Seto district, where chinaware for domestic use is chiefly produced, and where about 40 per cent. curtailment of production is being practised.

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.

1933, 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 and in 1933 reached ¥15,326,611. 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 Glass-ware 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 re-

search 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 ex-

ported 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 1,900,000 cases annually (one case contains 30.303 sq. metres of glass).

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	12,500,000	6,780,000	1,000,000	Tsurumi, Kaniyama, 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 yen	For decorative purposes		For illuminating purposes		Bottles yen
		Beads and balls yen	Arm rings yen	Shades and globes yen	Others yen	
1923	2,201,676	—	1,340,948	1,692,792	—	20,180,056
1924	1,863,537	—	888,765	2,021,273	—	20,097,768
1925	3,510,011	—	1,263,247	2,423,538	—	20,764,506
1926	3,081,760	—	884,012	2,501,406	—	19,568,512
1927	5,109,338	—	907,606	2,926,844	—	16,195,949
1928	2,956,621	—	1,015,384	3,193,233	—	17,020,590
1929	3,360,644	465,742	1,070,851	1,826,201	435,785	17,813,390
1930	2,870,616	893,649	859,225	835,669	244,396	14,765,677
1931	2,455,320	71,003	570,215	388,894	944,922	10,927,000
1932	4,193,457	373,845	683,780	391,254	733,418	11,193,212

Year	Sheet glass thickness under 2.2 mm.		Sheet glass thickness under 4 mm.		Others		Looking glasses		Others yen
	Quantity cases	Value yen	Quantity Cases	Value yen	Quantity cases	Value yen	Quantity cases	Value yen	
1923	—	—	13,845,535	—	—	—	—	—	—
1924	—	—	18,531,007	—	—	—	—	—	—
1925	—	—	17,286,406	—	—	—	—	—	—
1926	—	—	15,504,763	—	—	—	—	—	—
1927	—	—	14,478,896	—	—	—	—	—	—
1928	—	—	15,145,425	—	—	—	—	—	—
1929	1,606,931	12,121,086	53,539	426,714	143,593	2,256,896	45,000	789,733	2,636,482
1930	1,863,592	12,915,426	169,680	2,291,086	12,339	220,499	44,467	255,995	2,545,465
1931	2,104,662	13,890,047	99,484	1,910,273	16,060	382,972	53,550	128,563	2,368,098
1932	1,757,086	9,908,276	337,550	2,137,880	210,990	2,124,935	80,563	235,182	2,548,488

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

Kinds	1924		1929		1930	
	Quantity	Value	Quantity	Value	Quantity	Value
Window glass in 1,000 sq. ft.	1,729	220	5,842	833	3,790	260
Thermos in doz.	91,264	859	230,276	1,494	232,096	1,525
Glass bottles in 1,000 doz.	9,866	3,171	15,534	4,099	15,550	2,970
Glass cups in 1,000 doz.	1,947	1,572	3,705	2,426	2,285	1,376
Glass tableware in 1,000 doz.	—	—	657	562	142	126
Watch glasses in gross	77,032	152	134,348	224	71,855	169
Glass beads and balls in 100 kin	—	1,379	11,966	774	7,980	503
Spectacles in 1,000 pcs.	—	—	2,995	291	2,587	265
Looking glasses in 1,000 pcs.	8,776	1,912	21,210	2,213	16,091	1,952
Other glasses & manufactures	—	849	—	788	—	1,118

Kinds	1931		1932		1933	
	Quantity	Value	Quantity	Value	Quantity	Value
Window glass in 1,000 sq. ft.	2,808	303	5,120	377	13,710	969
Thermos in doz.	116,570	690	92,055	555	191,455	1,330
Glass bottles in 1,000 doz.	11,397	2,109	16,471	2,814	19,118	3,735
Glass cups in 1,000 doz.	2,853	1,448	3,746	1,724	4,738	2,827
Glass tableware in 1,000 doz.	199	167	485	337	1,118	749
Watch glasses in gross	63,550	71	76,375	83	88,150	99
Glass beads and balls in 100 kin	6,391	371	16,949	1,043	19,506	1,179
Spectacles in 1,000 pcs.	2,157	221	4,354	412	3,705	977
Looking glasses in 1,000 pcs.	12,705	993	23,871	1,306	40,647	2,225
Other glasses & manufactures	—	341	—	625	—	1,151

IMPORTS OF GLASS (Value in ¥1,000)

Kinds	1928		1929		1930	
	Quantity	Value	Quantity	Value	Quantity	Value
Uncoloured plate glass under 2.2 mm., 1,000 sq. m.	2,893,702	3,114	1,320	866	2,216	1,892
Uncoloured plate glass under 4 mm., 1,000 sq. m.	61,873	118	211	323	118	174
Other uncoloured plate glass in 1,000 sq. m.	184,856	928	573	3,175	430	2,086
Other plate glass in 1,000 sq. m.	190,398	2,352	685	1,260	551	972
Plate glass having inlaid metal wire or net in 1,000 sq. m.	180,167	633	137	497	183	511
Dry plates for photography in 100 kin	12,302	1,399	13,732	2,032	17,008	1,472

Kinds	1931		1932		1933	
	Quantity	Value	Quantity	Value	Quantity	Value
Uncoloured plate glass under 2.2 mm. in 1,000 sq. m.	2,053	825	1,565	977	1,410	1,090
Uncoloured plate glass under 4 mm. in 1,000 sq. m.	36	67	53	260	35	235
Other uncoloured plate glass in 1,000 sq. m.	370	1,772	247	1,885	166	1,622
Other plate glass in 1,000 sq. m.	607	832	431	845	460	928
Plate glass having inlaid metal wire or net in 1,000 sq. m.	136	367	122	504	164	632
Dry plates for photography in 100 kin	17,008	1,472	13,770	1,639	14,162	2,195

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 *naere* 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, Iyemitsu, 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 Chojū, Koma Ikyū, 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 aesthetic 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, ¥630,000 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 prefec-

tures 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, 77.68%, 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 applica-

tions. 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 purpose 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 bad 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 presented 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 re-

lief 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 1932, the latest figure available, amounted to ¥26,632,909 while exports amounted to ¥1,195,000 in 1932 and ¥2,371,000 in 1933. Production classified according to prefectures follows:

Prefecture	Production in 1932 (In Yen)
Kyoto	3,707,166
Aichi	4,211,749
Ishikawa	2,562,266
Fukushima	1,736,211
Wakayama	2,151,846
Shizuoka	1,503,889
Fukui	1,296,760
Niigata	944,164
Tozama	909,205
Yamagata	622,199
Shiga	604,742
Kagawa	572,715
Others and Total	26,632,909
1931	25,559,510
1930	28,244,006
1929	33,986,982
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 supply of soda ash in 1932 amounted to 148,000 tons, of which 95,000 tons were produced by Japanese manufacturing companies, and it is anticipated that the total domestic demand will be met by do-

mestic production with a surplus for export in 1933.

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 annual demand for caustic soda in Japan is estimated at about 60,000 tons, of which 35,000 tons were manufactured in the country last year but after March, 1933, not a single ton was imported, as 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 improve-

ment was registered by the paper manufacturing companies, who consume 70 per cent. of the total production. The business solely depends on the rise and fall of the foreign-style paper manufacturing industry.

Present State of the Industries

Stimulated by development of all sorts of chemical industry, the demand for caustic soda gained at home. No self-sufficiency has been realized yet, but, because of high tariff, imports have been falling. The 1933 imports totalled 12,300 metric tons against 22,054 tons for 1932 and 41,596 tons for 1931. In the same year the production amounted to 106,700 tons against 71,227 tons for 1932 and 44,782 tons for 1931. Self-sufficiency is anticipated in the near future with prospective completion of a high pressure soda ash factory of the Asahi Glass Company. Demand for soda ash also gained during 1933 following an active industry of glass, rubber and celluloid industries. The 1933 production was 291,700 metric tons, in striking contrast to 134,780 tons for 1932 and 93,243 tons for 1931. Imports for 1933 were 38,600 tons, falling 7,830 tons from the year before. The 1933 production of bleaching powder was 47,832 metric tons against 32,702 tons for 1932 and 36,580 tons for 1931. Last year's exports were 2,808 tons, falling from the previous two years when the amount was 2,956 tons for 1932 and 3,266 tons for 1931. The increase of productive equipment and capitalization has been done since 1933. The Japan Soda Company increased its capital to ¥10,000,000; the Asahi Glass Company doubtly increased its capital to ¥3,000,000; the Tokai Soda Company planned to erect a new factory; the Dai Nippon Artificial Fertilizer Company planned to in-

crease capacity of soda ash at its Onoda factory from 5,000 tons to 15,000 tons; and many others advanced plans for increased production. With the bustling animation of soda industry a question regarding the supply of industrial salt, which forms the most important material, was made a theme of discussion. Japanese industrialists turned their attention to exploitation of salt fields in the Kwantung Leased Territory and coasts along the Gulf of Liaotung in Manchouikuo. Japan needs 1,000,000 tons of industrial salt a year and imports 400,000 tons from Egypt and Somaliland and 250,000 tons from Kwantung, Taing-tao and Formosa. They have arranged with Manchouikuo authorities for supply of necessary amount of industrial salt from there. Investigation of extensive salt fields along the Gulf has been started. It is planned at least 700,000 tons of salt be imported from there in the future. Of 231,000 tons of demand for soda ash for 1933, 95,000 tons were used for caustic soda; 60,000 tons for glass; 22,000 tons for chemicals; 17,000 tons for soap; 15,000 tons for carbonic magnesium; and 22,000 tons for others. Of 105,000 tons of demand for caustic soda for 1933, 50,000 tons were used for rayon; 23,000 tons for dyes; 16,000 tons for soap; 10,000 tons for bleaching purposes; and 6,000 tons for drugs and other purposes. The Japan Soda Company is one of the principal manufacturing companies. Its yearly production involves 3,500 tons of caustic soda and 18,000,000 pounds of bleaching powder. Its present capital is ¥10,000,000. The Nippon Soda Kogyo Kaisha, generally known as N.S.K., produces caustic soda and soda ash by ammonium method. It has attained business prosperity through protection of the Govern-

ment. The Hokkai Soda Company produces 4,000 tons of caustic soda and 15,000,000 pounds of bleaching powder. It specializes in manufacture of soda by quicksilver method. The Asahi Electro-Industry Company engages in the soda and hardened oil industries. Its productive capacity of caustic soda is 4,500 tons and that of bleaching powder 18,000,000 pounds. The Nankai Bleaching Powder Company specializes in manufacture of bleaching powder and caustic soda. As bleaching powder manufacturer this is the oldest establishment of its kind. The Dai Nippon Artificial Fertilizer Company manufactures bleaching powder and soda as side-lines. Its yearly production of soda is 9,000 metric tons and that of bleaching powder 5,449 tons. The Osaka Soda Company mainly engages in manufacturing of caustic soda, yearly production of which is estimated at 5,000 tons.

Data on Soda Ash, Caustic Soda and Bleaching Powder

Below are given data bearing upon the industry:

PRODUCTION AND IMPORTS OF SODA ASH

	Production	Imports	Supply
	(In metric tons)		
1912	2,073	26,406	28,479
1914	1,722	32,700	34,422
1916	2,000	38,103	40,103
1918	3,000	55,871	58,871
1920	7,000	61,228	68,228
1922	8,220	102,500	110,720
1924	9,628	118,300	127,928
1926	17,868	36,600	54,468
1927	24,856	98,000	122,856
1928	30,901	77,400	108,301
1929	42,596	77,000	119,596
1930	57,235	65,206	122,441
1931	93,243	34,366	127,609
1932	134,780	45,434	180,214
1933	201,700	35,600	237,300

PRODUCTION, IMPORTS AND EXPORTS OF CAUSTIC SODA

	Production	Exports	Imports	Supply
	(In metric tons)			
1913	4,257	—	12,964	16,221
1916	7,183	—	10,766	17,949
1918	8,920	397	91,545	100,862
1919	10,907	494	36,768	48,169
1921	9,592	806	1,294	10,692
1923	19,390	165	3,604	21,159
1925	25,316	218	22,381	47,753
1926	23,479	42	36,498	59,919
1927	26,015	55	41,275	67,245
1928	28,123	33	61,512	89,668
1929	33,527	23	42,727	76,227
1930	32,864	18	37,589	70,431
1931	44,783	11	41,596	78,198
1932	71,327	1,300	22,600	94,027
1933	106,700	5,100	12,300	124,000

Figures below show supply and demand of caustic soda and bleaching powder:

DEMAND AND SUPPLY OF CAUSTIC SODA

	Production	Imports	Exports	Domestic supply
Year and month	(In metric tons)			
1933				
January-June total	25,172	8,183	2,366	30,990
July	4,281	255	516	4,020
August	4,597	190	512	4,275
September	4,552	1,256	442	4,166
October	4,677	1,256	511	4,166
November	4,416	1,725	435	5,606
December	4,698	—	—	—
1933 total	92,275	—	—	—
1934				
January	4,171	—	—	—

Prices of Caustic Soda Prices all last year were fairly stable but toward the end of February of this year they threatened to fall below ¥20. This appears to have been due to a temporary over-production or to a move to capture what little remains of the market for imports. Due to the excellent business, companies have been expanding capacities and the industry is not sufficiently well organized to make cartel control possible.

Caustic soda manufacturers are also worried because some of the

rayon companies are considering installing plants of their own. They also fears higher prices for salt but admit that gains at the present state of speed will not be sufficient to cripple the industry for a long time to come. Discounting the adverse factors, they all count on three or four more years of prosperity.

Soda made longer advances than any other chemical industry during 1933. For the latter half of the year every company showed a higher rate of profit.

PRODUCTION AND EXPORTS
OF BLEACHING POWDER

	Production and Exports			Supply
	Production	Exports	Supply	
	(In metric tons)			
1922	23,359	2,797	20,562	29,309
1923	36,973	2,641	34,332	51,961
1924	32,954	2,639	30,315	40,844
1925	33,656	2,695	30,961	55,035
				41,006
				20,500

DEMAND AND SUPPLY OF BLEACHING POWDER

1933	Production	Imports	Exports	Domestic supply
January-June total	29,027	0	1,738	27,289
July	2,885	0	143	2,742
August	4,789	0	267	4,522
September	5,002	0	385	4,617
October	5,839	0	281	5,558
November	5,618	0	290	5,328
December	5,545	0	275	5,270
1933 total	59,298	0	3,374	55,924
1934				
January	4,795			

Price movements have been as follows:

PRICE MOVEMENTS OF CAUSTIC SODA AND
BLEACHING POWDER

	Caustic soda Yen per 100 kg.		Bleaching powder Yen per 65 kg.	
	1933	1932	1933	1932
September	22.00	14.80	4.70	4.40
October	22.00	15.80	4.70	4.40
November	22.00	20.70	4.70	4.50
December	21.50	23.20	4.70	4.60
	1934	1933	1934	1933
January	20.50	26.30	4.70	4.70
February	20.50	26.30	4.70	4.70
End of February	20.00	24.00	4.40	4.70

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 Seizosha, 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

Year	Toilet soap yen	For industrial purposes yen	For medical purposes	For laundry	Powdered soap	Others	Total yen
1922	14,327,219	450,133	—	—	—	—	23,569,143
1923	13,916,399	3,718,969	—	—	—	—	20,893,747
1924	17,981,656	3,093,412	—	—	—	—	28,752,543
1925	20,526,369	1,964,034	—	—	—	—	30,118,898
1926	21,925,018	2,114,113	—	—	—	—	33,906,120
1927	23,339,174	1,849,739	—	—	—	—	36,141,464
1928	24,654,714	2,283,040	—	—	—	—	39,145,885
1929	22,690,865	2,370,166	5,939	10,199,752	1,767,118	1,906,760	38,942,020
1930	18,564,433	3,863,166	307,251	11,093,563	1,833,259	605,619	35,962,291
1931	17,246,110	1,480,689	173,840	7,561,445	2,083,819	1,355,569	29,000,872
1932	19,164,977	1,459,580	269,958	8,389,504	2,642,679	628,457	32,344,212

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 Present Condition of Oil Industry

Production of hardened oil in Japan during 1933 amounted to 66,200 metric tons in contrast to 54,800 tons for 1932; 47,200 tons for 1931; and 44,600 tons for 1930. The increase was the result of high market price. The domestic consumption also gained to 50,000 tons for 1933 contrasted to 47,000 tons for 1932; 42,000 tons for 1931; and 41,000 tons for 1930. 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 1933 year exports were 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 a 77 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 production of soy bean oil in 1913 was valued at ¥1,330,000, but by 1932, this had increased to ¥10,570,255, after having touched over ¥13,900,000 in 1929; rapeseed oil was valued at ¥8,398,297 in 1932; groundnut and copra oils reached over ¥10,000,000 during the World War, but had de-

creased to ¥244,834 and ¥1,191,043 by 1932. On the other hand, the production of linseed oil during the World War was valued at barely ¥200,000, but this had increased to ¥1,015,617 in 1932. 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 respectively, while in 1932 they were 1,165,868 and ¥3,122,444 respectively. The above figures are for mills employing more than 5 persons, and if smaller mills be included production will be much greater.

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 steadily decreasing and production has correspondently fallen off. The yield in 1932 was 3,784,684 kilogrammes.

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 1932 being ¥5,297,000. The importation of vegetable oils is very small indeed. The art of producing vegetable oils has progressed very much of late, but there is still much room for further progress in respect to high class oils for edible purposes.

PRODUCTION OF VEGETABLE OILS

Year	Rapeseed oil yen	Sesameseed oil yen	Groundnut oil yen	Cottonseed oil yen	Copra oil yen	Soy bean oil yen
1923	12,349,872	2,471,602	245,565	1,320,531	1,817,157	9,439,578
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	154,172	2,040,500	2,799,482	13,923,496
1926	13,474,263	2,182,166	107,517	2,606,062	2,823,263	13,886,947

Year	Rapeseed oil yen	Sesameseed oil yen	Groundnut oil yen	Cottonseed oil yen	Copra oil yen	Soy bean oil yen
1927	15,228,985	2,443,698	229,845	1,313,650	2,690,566	13,716,316
1928	12,214,308	2,645,601	165,667	2,011,497	2,346,020	18,963,586
1929	12,214,308	2,398,809	253,659	3,399,863	2,869,842	13,968,586
1930	10,826,025	2,382,457	234,380	2,568,777	2,184,334	9,146,415
1931	8,974,304	2,428,682	276,802	1,456,122	1,899,339	9,143,974
1932	8,398,297	3,122,444	244,834	1,195,868	1,991,643	10,570,255

Year	Linseed oil yen	Perilla oil yen	Hempseed oil yen	Wood oil yen	Camellia oil yen	Other oils yen	Total yen
1923	1,875,641	2,163,665	310,492	246,648	1,566,159	5,699,676	29,577,586
1924	2,044,161	1,900,467	281,986	133,216	1,563,764	4,687,174	40,587,366
1925	1,904,994	2,146,127	257,298	124,257	1,490,297	4,320,559	45,432,397
1926	1,529,994	1,774,963	205,567	154,724	1,184,771	4,753,063	44,223,210
1927	1,584,332	896,291	208,465	125,365	1,013,593	3,040,348	29,925,965
1928	2,733,109	1,107,169	251,197	168,539	814,459	2,574,879	41,692,703
1929	2,945,224	1,442,661	218,218	153,281	728,262	3,466,224	44,247,327
1930	1,977,673	2,422,153	207,218	93,713	599,995	2,339,877	34,102,586
1931	1,994,542	2,632,760	154,928	76,071	428,728	2,134,248	29,211,669
1932	1,915,617	2,358,392	152,654	153,716	336,399	2,434,947	31,944,397

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
1923	128,680	—	1,212,480	—	—
1924	141,619	—	1,514,668	—	—
1925	145,592	—	2,115,283	—	—
1926	221,601	—	4,733,725	—	—
1927	315,458	—	5,170,370	—	—
1928	242,269	—	6,697,595	—	—
1929	225,088	394,642	3,527,435	794,925	977,117
1930	235,392	137,295	3,491,551	577,326	673,379
1931	273,245	26,686	422,439	168,921	221,176
1932	95,774	59,296	802,350	614,915	1,147,323

Year	Puna oil yen	Beef tallow yen	Pork tallow yen	Others yen	Total yen
1923	—	233,029	—	—	1,574,134
1924	—	569,406	—	—	3,325,333
1925	—	625,710	—	—	3,356,273
1926	—	1,950,947	—	—	5,966,273
1927	—	2,050,130	—	—	7,593,492
1928	—	4,133,321	—	—	10,443,325
1929	126,939	1,624,343	144,692	197,314	9,223,695
1930	97,939	996,266	169,454	292,495	9,461,251
1931	67,000	712,633	166,981	196,333	2,374,356
1932	75,714	666,615	143,921	52,698	3,372,516

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

Year	Vegetable wax	Candles	Boiled oil	Hardened oil	Manufactures of oils			Total
	yen	yen	yen	yen	Hardened wax	Oleine	Stearine	
	yen	yen	yen	yen	yen	yen	yen	yen
1921	796,019	4,887,846	276,016	3,226,109	—	—	—	8,936,010
1922	2,203,837	5,631,954	1,812,275	6,792,871	—	—	—	15,440,937
1923	2,079,947	5,827,257	1,476,829	7,427,674	—	—	—	15,803,613
1924	1,193,291	6,482,810	2,664,024	5,514,409	—	—	—	15,174,534
1925	2,877,735	5,334,372	3,351,349	6,676,027	—	—	—	19,039,483
1926	2,810,223	5,328,126	3,117,245	11,697,488	—	—	—	14,952,736
1927	1,467,573	5,178,200	3,319,278	12,124,719	1,061,950	880,688	219,425	17,550,428
1928	1,808,380	4,785,545	2,820,546	10,109,944	323,545	802,399	200,592	18,854,576
1929	1,293,719	4,471,845	2,789,297	7,176,941	517,986	419,800	213,321	10,949,161
1930	1,240,013	4,932,548	2,924,733	10,080,127	623,182	437,644	4,940,823	18,118,727

IMPORTS OF OILS, TALLOW AND MANUFACTURES THEREOF

Year	Caster oil	Olive oil	Beef tallow	Stearine	Oleine
	yen	yen	yen	yen	yen
1921	32,000	75,000	4,345,000	51,000	194,000
1922	124,000	109,000	4,119,000	100,000	963,000
1923	268,000	100,000	6,093,000	203,000	129,000
1924	167,000	165,000	5,941,000	188,000	159,000
1925	74,000	185,000	6,324,000	203,000	312,000
1926	230,000	161,000	5,025,000	102,000	222,000
1927	2,000	123,000	5,407,000	271,000	109,000
1928	4,000	243,000	5,019,000	337,000	215,000
1929	45,000	123,000	3,894,000	242,000	112,000
1930	191,000	129,000	2,481,000	139,000	100,000
1931	81,000	297,622	2,453,816	171,751	11,000

EXPORTS OF OILS, WAX, AND MANUFACTURES THEREOF

Year	Pearls oil	Bean oil	Rapeseed oil	Fish oil	Whale oil	Vegetable wax	Hardened oil
	yen	yen	yen	yen	yen	yen	yen
1921	—	1,373,000	421,000	1,225,000	—	1,050,000	—
1922	—	677,000	419,000	1,341,000	—	1,199,000	—
1923	—	1,300,000	781,000	3,176,000	—	2,485,000	—
1924	—	2,878,000	1,345,000	4,127,000	—	1,414,000	—
1925	—	3,043,000	6,038,000	4,485,000	—	1,626,000	—
1926	—	1,704,000	5,863,000	7,480,000	—	2,339,000	—
1927	—	1,623,000	2,105,000	7,941,000	220,000	2,088,000	2,017,000
1928	—	2,236,000	4,316,000	7,722,000	43,000	2,253,000	2,006,000
1929	—	4,359,000	4,672,000	7,600,000	361,000	1,870,000	3,987,000
1930	803,000	1,949,000	1,963,000	1,797,000	146,000	1,154,000	2,997,000
1931	1,100,000	1,010,000	1,808,000	2,738,000	467,000	1,177,191	1,721,000

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 to ¥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 1932 the total production in the country was as large as ¥65,882,857 in value, if we include goods produced by people working in their own homes. The number of mills employing more than 5 persons in 1932 was 684, and the number of workers 32,318. Hyogo, Tokyo and Osaka prefectures are the chief producing centres. Production in these and other important prefectures in 1932 was as follows:

Prefecture	Value (yen)
Hyogo prefecture	¥ 23,521,637
Tokyo	823,674
Osaka	11,459,318
Hiroshima	1,846,545
Miyé	1,368,797
Okayama	511,845
Kanagawa	2,715,020

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 1933 year import of gutta percha amounted to ¥29,685,000 in contrast to ¥15,988,000 for 1932 and ¥13,183,000 for 1931. The 1933 year exports totalled ¥26,028,000 against ¥14,960,000 for 1932 and ¥10,625,000 for 1931. How-

ever, many good experts have entered the industry recently and not only has there been a large increase in production but great progress has been made in technique.

The chief articles produced are tyres, rubber shoes, toys, tubes, electric battery cases, etc. The total amount of production of rubber manufactures reached ¥69,995,337, in 1932. (The following table gives statistics for private mills employing more than five persons only.)

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 AND EXPORTS OF RUBBER AND RUBBER MANUFACTURES

Year	Import of Rubber	Imports of Tyres for automobiles	Imports of Manufactures of rubber	Exports of manufactures of rubber
	yen	yen	yen	yen
1921	40,507,000	—	1,357,000	—
1922	34,635,000	—	1,722,000	—
1923	22,232,000	4,671,000	1,735,000	—
1924	34,130,000	4,975,000	1,679,000	—
1925	17,930,000	2,831,000	962,000	—
1926	13,183,000	2,094,000	1,114,000	16,425,000
1927	15,988,000	423,000	1,045,000	14,960,000
1928	29,685,000	3,000	362,000	26,028,000

PRODUCTION OF RUBBER MANUFACTURES IN JAPAN

Year	Soft Rubber Manufactures				
	Shoes and other footwear		Toys	Tyres and accessories	Engineering
	No. pairs	Value			
1923	17,598,527	¥12,506,956	¥2,262,656	—	—
1924	14,655,724	12,609,659	3,382,797	—	—
1925	11,742,122	15,922,815	3,437,872	—	—
1926	15,080,003	15,358,532	2,629,955	—	—
1927	17,171,984	18,153,001	3,064,829	—	—
1928	23,143,180	21,306,171	2,517,955	—	—
1929	37,913,269	24,934,059	2,318,115	25,753,209	2,126,126
1930	47,290,049	20,379,528	2,312,680	19,255,083	1,420,962
1931	32,266,482	15,929,522	3,320,303	19,424,350	629,653
1932	34,294,223	17,352,503	5,027,633	24,080,169	1,173,211

Year	Soft Rubber Manufactures				Hard rubber manufactures	Grand total
	Belts	Rubber pipes	Others	Total		
1923	—	—	—	¥46,043,932	¥1,026,596	¥47,070,528
1924	—	—	—	49,325,375	2,617,947	51,943,322
1925	—	—	—	52,320,298	2,270,184	54,590,482
1926	—	—	—	54,834,657	3,765,891	58,600,548
1927	—	—	—	63,282,401	2,772,566	66,054,967
1928	—	—	—	69,075,880	1,195,159	70,271,039
1929	—	—	—	74,573,782	1,727,050	76,300,832
1930	4,608,853	1,318,793	9,839,841	59,363,635	1,905,045	60,796,669
1931	4,878,673	1,972,093	9,551,681	54,992,096	1,112,300	56,104,409
1932	3,438,943	2,191,898	10,563,733	64,827,092	1,054,865	65,881,957

WORLD'S PRODUCTION OF RUBBER

Places	1929	1930	1931	1932
	tons	tons	tons	tons
Malay Peninsula	453,463	442,940	623,389	495,706
Ceylon	30,439	76,315	61,600	49,080
India	11,719	10,781	8,007	3,700
Dutch Indies	256,386	238,973	255,048	219,124
Other places of production	33,585	31,799	35,409	32,730
Brazil	22,598	17,137	13,820	6,326
Other wild grown	5,615	3,770	2,575	1,000
Total	853,410	821,515	795,441	799,646

WORLD'S CONSUMPTION OF RUBBER

Countries	1929	1930	1931	1932
	tons	tons	tons	tons
U. S. A.	466,473	371,119	346,683	316,500
Great Britain	72,000	75,050	76,363	84,700
France	62,000	60,000	60,000	60,000
Germany	50,000	47,000	36,000	41,000
Italy	16,000	18,000	10,000	15,000
Russia	12,700	17,500	27,000	25,000
Canada	35,000	28,000	28,000	19,000
Japan	34,000	33,000	38,000	55,000
Belgium	9,800	10,500	10,000	8,000
Others	27,500	24,824	41,612	56,127
Total	785,475	684,098	668,660	679,329

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 ¥13,160,457 and exports reaching ¥8,651,000 in 1933, 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. Cellophane is manufactured at the Kanzaki factory of the Dai Nippon Celluloid Company, and is now procurable at very low prices. The celluloid production in Japan for 1933 is estimated at about ¥20,000,000 in contrast to ¥12,217,561 (by mills employing more than 5 persons) for 1932, ¥10,403,000 for 1931 and ¥12,345,000 for 1930.

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 Kobe. 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, Hyogo-ken 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. These countries have gradually become self-supplying as regards matches, and this manufactured article has practically disappeared from the export list except for exports to the Japanese colonies.

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 Mitau 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. The industry developed steadily during the better part of the Meiji Era 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 top 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 control of foreign capital. Exports last year were made to China, India, South Seas and other points. The 1931 output in Japan was worth ¥1,924,000, of which Hyogo prefecture manufactured ¥6,638,000, or 84 per cent. Last year's production is roughly estimated at about ¥10,000,000 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.

According to the Daido Match, Japanese matches exported during the first nine months of 1933, compared with the year before, follow:

Year	Quantity produced	Value	Match-boxes		Matchwood	
			yen	yen	yen	yen
1922	23,027,172	18,949,279	11,299,910	3,404,252		
1923	24,195,708	14,811,402	1,595,544	2,747,792		
1924	24,785,995	15,795,541	1,459,927	1,879,594		
1925	24,139,266	16,987,560	1,256,968	2,358,545		
1926	24,087,312	15,667,221	1,111,149	1,568,861		
1927	3,261,575	14,540,033	1,217,250	2,202,272		
1928	19,471,637	12,445,793	741,262	1,293,046		

For	1933		1932
	(In boxes)		
China	12		33
Hongkong	2,997		593
Singapore	4,940		3,004
Cebu	159		
Bombay	395		
Other Indian ports	1,728		979
South Seas	2,719		1,390
Penang	119		
Tatung	5		2
Dairen	1,340		911
Manila	2,724		2,022
America	48,927		2,993
Korea	66,396		58,237
Caribbean	27,128		27,292
South America	254		744
Port Said	564		1,100
Australia	928		
Africa	2,537		200
China	14		29
Other countries	3,569		577
Total	166,295		112,758
Re-exports	72,217		14,879

Number of Factories. The number of match factories in Japan was 140 at the end of 1931, according to the Factory Statistics of the Ministry for Commerce and Industry. Workers employed in them numbered 6,131, of whom male workers totalled 2,961 and female workers 4,070. Details were:

Employing fewer than	No. of factories	No. of workers
between 10-15	17	261
" 15-20	39	777
" 20-30	72	441
" 30-100	29	1,226
" 100-200	2	955
more than 200	2	2,220

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

MISCELLANEOUS INDUSTRIES

Year	Quantity (metric tons)	Value (¥1,000)	Match Basis	Matchwood
1931	12,000,000	1,200,000	1,200,000	1,200,000
1932	12,500,000	1,250,000	1,250,000	1,250,000
1933	13,000,000	1,300,000	1,300,000	1,300,000
1934	13,500,000	1,350,000	1,350,000	1,350,000
1935	14,000,000	1,400,000	1,400,000	1,400,000

The following table is estimated to 1934

Year	Quantity (metric tons)	Value (¥1,000)	Year	Quantity (metric tons)	Value (¥1,000)
1931	12,000,000	1,200,000	1936	14,500,000	1,450,000
1932	12,500,000	1,250,000	1937	15,000,000	1,500,000
1933	13,000,000	1,300,000	1938	15,500,000	1,550,000
1934	13,500,000	1,350,000	1939	16,000,000	1,600,000
1935	14,000,000	1,400,000	1940	16,500,000	1,650,000

Source: Statistics of Japan, 1935

Dyes

Through Governmental production over many years, the Japanese dyestuff industry is now well established. Self-sufficiency will be only a matter of time, for within recent years the industry has been making momentum among the other industries of the country. Japan exports 20 per cent. of all synthetic dye demand of domestic. The average ratio of high-grade dye supply, Japan can supply 8 per cent. of synthetic dyes, 12 per cent. of acid dyes, 20 per cent. of mordant dyes and 26 per cent. of vat dyes for internal use. Synthetic dyes were already introduced in 1857 to the volume of 2,175 metric tons. World production capacity had reached 200,000 metric tons in 1934.

Japan gets from Germany consumption of these dyes is approximately 150,000 kilo worth about ¥2,000,000. Research in producing these dyes is underway by the Mitsui Mining and Japan Dyestuff Manufacturing Companies. Notwithstanding all this domestic activities, Japan still imports a large volume of dyes. Vat colour imports were especially notable because Mitsui Mining produced mostly artificial indigo. The 1935 import volume of artificial indigo was only 10 tons, contracted to 254 tons in 1932. Its import value in 1935 was ¥5,000,000, or 11 per cent. duty on ¥45,000,000 from its value in 1932. Details concerning imports during 1932 compared with 1935 follow:

DYESTUFF, ALUMINIUM

Colors	1935		1932	
	Amount (1,000 L.S.)	Value (¥1,000)	Amount (1,000 L.S.)	Value (¥1,000)
Basic	11,076	1,203	109,322	1,325
Direct	984,000	1,751	977,000	1,993
Acid	171,000	1,350	924,474	1,799
Mordant and intermediates	273,464	1,794	794,555	1,511
Substrate	10,131	433	58,222	225
Oil	86,944	1,493	628,073	2,519
Others	21,170	157	72,315	151
Total	978,885	9,081	4,977,070	9,523

The average price of these imports of dyes in 1935 was ¥9.29 per kilo-gramme, against ¥4.57 in 1932 and ¥2.04 in 1931. This accounted for a decrease in imports. 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 decrease in production of dyes during 1935 and exports of Japan-made dyes for the same year, compared with the preceding seven years, follow:

Year	Domestic Production		Exports	
	Amount (Metric tons)	Value (¥1,000)	Amount (Metric tons)	Value (¥1,000)
1927	9,505	2,545	574	274
1928	9,551	2,567	590	291
1929	10,577	2,827	1,169	360
1930	10,844	2,979	811	360
1931	9,812	2,191	2,065	280
1932	9,525	2,517	2,511	270
1933	11,843	3,223	1,721	1,722
1934	12,001	3,200	2,125	2,205

The Government on March 10, 1933, raised the customs tariff on

import dyes by 5 per cent. uniformly for protection of home products.

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 Kayasu, Yokohama, in the spring of the same year. At the Kayasu factory Korean alumina 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 2,000 tons, but Japan's annual de-

mand is 10,000 to 15,000 tons, which used to be entirely imported from abroad. The capitalization of this company is ¥12,000,000. Another alumina manufacturing plant has been advanced. Anticipating completion of the Iizugatsutan Power Station in June by the Tohoku 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 Iizugatsutan Station will be sup-

plied by the Taiwan Electric organization. Promoters of the prospective company have carried on exhaustive researches into the manufacture 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 Nichiman Aluminium Company was also established under joint investment of Japanese and Manchoutikuo capitalists in September, 1933. Progress of the company is watched eagerly in military circles where it is widely used. The world's total use of aluminium is estimated at 300,000 tons a year, of which Japan needs 10,000 tons. Nichiman Aluminium is capitalized at ¥5,000,000. It will handle the refining end of the business, getting alumina extracted from alum by the Manchurian Aluminium Company. This latter concern will be founded by the South Manchuria Railway Company and, in the future, will be merged to Nichi-

man Aluminium. Nichiman plans to manufacture 5,000 metric tons a year at first and then to increase capacity to 12,000 tons, filling the present demand in Japan. The plant will be erected in Toyama prefecture. Operations are expected to be started in the autumn of 1934. Aluminium manufacturing is considered the most difficult metallurgical line in the world. Practically all aluminium now on the market is made from bauxite. Nichiman has none, but will use alum obtained in Korea and Manchuria. An international patent held by the Physico-Chemical Research Institute of Japan provides for dry treatment of alums. One advantage of this method is that silicious rock, formerly considered a great obstacle, need not be separated at the outset, but can be sold later as a by-product. The prospectus admits that several years may pass before the company shows a profit. Construction expenses are set at ¥6,330,000, or ¥1,200 a ton. This is considered exceedingly cheap, for the per ton charge in the United States and Europe is about ¥4,000. 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 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.

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, today is exporting this domestic product in small volume, and the line is one of the most promising in the land. Cellophane exportation has been conducted since January, 1934, by the Mitsui Bussan Kaisha. 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. At the end of March, 1934, the monthly output is expected to reach about 10,000 reams. A favourable consideration for the cellophane industry here is that practically limitless supplies of rayon pulp, used in manufacturing cellophane, are available

from Manchoutikuo. A large pulp producing plant will soon be established there by Oji Paper, Oriental Development and other Japanese companies with interest in Manchoutikuo. This industry in Japan may outdistance the corresponding French industry, and places its products on the markets of various European countries. Recently the British Government issued its first report on cellophane imports during 1933. According to it, imports in that year were worth £101,398, of which the Japanese quota came to £732. 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. Imports during 1928 totalled 45,493 kilogrammes, worth ¥209,203, but they dropped to 10,660 kilogrammes, worth ¥35,171, during 1932. During 1931 France shipped to Japan ¥72,277 worth of cellophane, Germany ¥54,525, Belgium ¥37,825, America ¥7,129 and others the remaining amount. The 1931 domestic production was 64,576 kilogrammes, worth ¥100,777.

Pyrethrum

Hokkaido is noted for producing pyrethrum flower, which is used as material for anti-insect powder in foreign countries. Pyrethrum is manufactured into power 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 these products. Wakayama prefecture is also noted for raising pyrethrum flower.

1933 Output of Commercial Articles

Japan's 1933 output of principal commercial articles, announced by the Ministry of Commerce and Industry, is given below. A significant fact is that all but three articles—spun silk, copper and petroleum products—during last year gained

over 1932. Exceptional industrial activity throughout most of the country provided a background for the increase. A full list giving volume of output or values for 1933, compared with 1932, follows:

	1933	1932
Cotton yarn (1,000 bales)	3,099	2,810
Spun silk (1,000 bales)	121	124
Rayon (1,000 boxes)	904	648
Wool (1,000 kilogrammes)	30,550	26,876
Tons (1,000 kilogrammes)	23,644	20,058
Muslin (1,000 metres)	112,503	—
Woolen textiles (1,000 metres)	40,624	—
Cotton textiles (¥ 1,000)	742,752	539,201
Silk textiles (¥ 1,000)	322,770	313,862
Rayon textiles (¥ 1,000)	150,019	121,740
Silk-cotton mixture (¥ 1,000)	22,071	20,806
Silk-hemp-wool mixtures (¥ 1,000)	1,796	1,398
Rayon-cotton-hemp-wool mixture (¥ 1,000)	39,885	28,210
Gold (1,000 grams)	13,492	12,334
Silver (1,000 grams)	185,345	163,035
Pig iron (1,000 metric tons)	2,031	1,542
Pressed carbon steel (1,000 metric tons)	2,456	1,946
Copper (1,000 kilogrammes)	68,455	71,012
Sulphur (1,000 metric tons)	104	77
Coal (1,000 metric tons)	30,049	26,081
Crude oil (1,000 hectoliters)	2,183	24,496
Portland cement (1,000 metric tons)	4,781	3,751
Superphosphorites (1,000 metric tons)	1,127	1,037
Ammonium sulphate (1,000 metric tons)	713	684
Calcium cyanamide (1,000 metric tons)	157	112
Bleaching powder (1,000 kilogrammes)	59,087	42,284
Caustic soda (1,000 kilogrammes)	106,642	71,325
Sheet glass (1,000 cases)	2,856	2,214
Foreign-style paper (1,000 kilogrammes)	655,045	594,070
Aniline (1,000 kilogrammes)	2,900	2,439
Soda ash (1,000 metric tons)	201	134
Wheat flour (1,000 sacks)	36,866	34,758
Refined sugar (1,000 piculs)	6,151	5,113

Curtailing production among principal industries in Japan has been practically discontinued since 1932.

With only calcium cyanamide and foreign style manufacturers maintaining the production ratios of 1932,

other industries have either let up or have completely abolished curtailment ratios. The change in these ratios since 1932 follows:

Industries	1932 average	1933 average	March 1934
Spinning	32.6%	27.6%	27.6%
Rayon	13.3	—	—
Bleaching powder	51.7	41.7	55.0
Calcium cyanamide	40.0	40.0	40.0
Superphosphorites	50.0	31.3	40.0
Sulphuric acid	50.0	25.0	40.0
Foreign-style paper	55.0	55.0	55.0
Portland cement	51.9	48.8	52.0

Industrialism in this country has advanced along the lines of inflation, as may be seen by a scrutiny of the above figures. In addition to these items, curtailment is gradually being abandoned in the coal, wheat flour, printing paper, iron and steel industries.

This turning away from curtailment has gone in line with business promotions, increases in capital and debenture flotations. During 1933 investment in business promotion totalled ¥1,135,000,000, a decided jump over the 1932 figure of ¥439,000,000. This item alone, since the embargo on gold was replaced in December, 1931, has amounted to ¥1,570,000,000.

Investigation by the Ministry for Commerce and Industry of industrial

factories in Japan for the 1932-33 fiscal year concerning their number, operatives and production value revealed gains over the preceding year. Factories included in the investigation employ more than five workmen each.

According to it, factories numbered 67,318, with an increase of 3,882; male workers 846,307, gaining 71,071; female workers 887,204, gaining 938; materials used by these factories were valued at ¥3,414,973,000, an advance of ¥359,809,000; and value of industrial production was worth ¥5,982,294,000, an increase of ¥807,890,000, all over the previous year. Details concerning the value of industrial production follow:

	1932-33 year (In ¥ 1,000)	1931-32 year
Spinning	2,212,088	1,925,806
Metal	591,135	431,438
Machinery and implement	598,840	498,014
Ceramics	161,716	144,712
Chemicals	937,956	813,062
Woodwork	158,756	146,966
Printing and bookbinding	177,797	176,712
Foodstuff	802,476	837,773
Gas and electricity	13,408	14,758
Others	237,294	184,453
Total	5,982,469	5,174,578

Effects of Rationalization

The Industrial Rationalization Movement has had so far fairly good effect since its enforcement in 1930. Industrialization was effected on

many industrial products, including jeaned drills, cotton crêpe, cotton flannel, habutaé, enameled wares, porcelain, rubber shoes, superphos-

phorites, bicycles and parts, towels, celluloid tooth brushes and others. The rationalization was first effected on jeaned drills with satisfactory results. Cotton crêpe was the second. The former has been effected since November 1, 1930, and the latter since January 1, 1931. By the measure, the total amount of monthly production three months ahead is fixed by mutual agreement of members of the guild concerned and quotas adopted by it for apportionment to members. The enforcement of production control was favourably received by overseas markets and this brought about market stabilization. Setback came over the exports with England going off gold and the outbreak of the Sino-Japanese incident and this forced the exports to be reduced. A substantial production control was later practised and this resulted in a marked decrease of stocks. Export cotton cloth has gone through the way nearly the same as that of jeaned drills. Because of a well-arranged control on production and sales, the industry has successfully tided over the difficulties confronting it. All these are attributable to the rationalization. In spite of the business depression for the latter half of 1931, these lines of industry maintained a comparatively sound condition, due to the control. The satisfactory industrialization conducted jeaned drills and crêpe has naturally stimulated other industries. Export flannel traders effected a control on production, sales and export quantity. Flannel production reaches about ¥50,000,000 a year, of which about ¥15,000,000 is directed for export. Before the World War, exports totalled only less than about ¥1,000,000, which advanced to ¥14,250,000 in 1930. Reckless production, ruinous competition, manufacture of shoddy articles for ex-

port, under-selling, dumping and the consequent sharp drop of prices and market uncertainty interfered with the industrial development. All these have been overcome by means of industrial rationalization. The market price has been stabilized by the control and, consequently, the products have become one of the principal exports of the country from an insignificant position they used to occupy, although the industry was hit hardest by the Sino-Japanese conflict, which proved fatal to the export to China, the largest consuming country of these products. The situation was readjusted with application of drastic measure of rationalization and this had proved effective to improve the situation as a whole.

As the rationalization of export cotton textiles proved a great success, the export silk textile industry followed suit and export habutae was the first involved in the export. Habutae has a long history as export. Its demand on overseas market has decreased. It used to be exported to a yearly amount of more than ¥100,000,000, but in later years the amount declined sharply. The 1932 export value sank as low as ¥6,333,000 in contrast to ¥30,364,000 for 1929. The sinking trade was caused by sundry defects on business transactions, production, sales and marketing. Lack of control on grades and quantity also was instrumental in less business. These have caused the interested parties to concentrate their energy on the improvement of quality and method of transactions and these have contributed a great deal toward the turn for the better in business. Effects have begun to be told since February, 1932, as fluctuation of market prices has become less and, consequently, demand has increased. Enameled wares were then rationalized. During the

World War the products made a signal development, but with the financial reaction following the termination of the War the export industry sank to a miserable plight. Reckless competition among producers defamed Japanese products in foreign markets. Alive to the need of bringing about a control, manufacturers took to the task of tiding over the crisis by introduction of a thorough-going control. The products used to total more than ¥10,000,000, of which ¥7,000,000 was for exports during 1925. In 1930, however, exports went off as low as ¥4,044,000, affected by economic depression. The division of production, according to the kinds, and quotas on production were enforced over manufacturers. Results were satisfactory on both production and exports. The outbreak of the Sino-Japanese incident and England's departure from gold had very much to do with a sharp decrease of overseas demand. The export to China, the Philippines and the Straits Settlements was hit hard, because enameled wares used to be handled by Chinese merchants, who instituted boycott against all sorts of Japanese articles. With subsequent alleviation of the boycott in foreign markets and an increasing demand from abroad following the drop of exchange rate, the export began to reassert itself. The control on porcelain wares was also practised with good results. It was confined to three large producing centres, namely, Aichi, Gifu, and Mie prefectures, which produce 80 per cent. of both for domestic use and exports in this country. Exports before the World War were only ¥6,000,000 a year, but in 1929 the export amount reached a record high of ¥37,000,000. In 1930 it sank to ¥27,000,000 and further to ¥19,000,000 in 1931. The export amount and production quantity

were placed under control. Results have not yet been fully told since its enforcement on August 1, 1931. The division of manufacturing field according to the kinds has, however, yielded satisfactory results. The rationalization of gum shoes has gone into force since May 15, 1931. Sundry evils marking the industry have been removed and the overseas credit has also been restored. Production and exports gained rapidly in recent years. In 1931 exports totalled about ¥15,000,000. These products were marketed in China, British India, the Union of South Africa, the Dutch East Indies, the Straits Settlements, Hongkong and the Kwantung Leased Territory, East Africa and Hawaii. Gum shoes include a fairly large amount of canvas shoes. Hyogo prefecture occupies more than 60 per cent. of Japan's total production. Price control, production quotas and price regulation were agreed in connection with rationalization. As the result, reckless selling ceased to exist, as production control was done on an approved plan under leadership of an association. Exports gained after the production control was effected. This was because the reckless competition was suspended and price stabilized. Demand from abroad was aroused more than ever before. Thus lack of control and order was completely overcome by rationalization. Superphosphorites are the most important of all chemical fertilizers used in Japan. The recent yearly consumption is about 27,000,000 kwan, valued at ¥38,000,000. However, the farm economic depression badly affected the demand. Ruinous competition ensued as the result. The Superphosphorite Industrial Guild was organized in 1931 to effect a control on the industry. While production gained yearly, the demand failed to gain in line with it. On the

contrary, the demand was sinking rapidly, because of a prolonged economic depression. Producers naturally cut their sales price and a keen competition followed. Industrialization was practised and production was restricted, but, due to conflicting interest among manufacturing concerns, the results so far have proved unsatisfactory. Control on bicycles was then taken up. Their production and sales have been placed under control since November 1, 1932, first on handles and rim brakes. Because of the fact that the manufacturing industry has been conducted by medium-sized and small industrialists, manufacturers used to wage a reckless competition among themselves. While the rationalization of other industries was mostly done for export, this industry had in its object the control on domestic market. The manufacturing production of bicycles and parts is roughly estimated at about ¥50,000,000, of which 10 or 15 per cent. is for exports. Production amount was apportioned to various bicycle industrial guilds and the minimum prices were fixed for the products. Testing of manufacturers is also looked after by these guilds. Results so far yielded have

been satisfactory. Then the control on towels has been conducted since February 1, 1933. The yearly production of towels is about ¥20,000,000, of which about ¥5,000,000 was for export. Rationalization was carried out mostly on production. Articles other than those coming under standardization were prohibited for sales. Results are supposed to be satisfactory. As regards the control over celluloid brushes, the control was conducted on their production and exports, which are almost equal, but, as America, the largest consumer of Japanese products, imposed a high tariff on these articles, the export amount is on a decreasing trend. The control has been enforced since March 1, 1933. Between 1933 and 1934 several exporters' guilds were organized for export control and rationalization. The Canned Oil Tuna Export Guild, the To-America Export Tangerine Guild, the Japan Export Electric Bulb Guild, the To-Britain Export Electric Bulb Guild, the Japan America Match Export Guild and others organized. All these were established through encouragement of the Ministry of Commerce and Industry.

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 1932-1933 may be obtained from the following:

Post, telegraph and telephone officials	175,91
Post, telegraph and telephone offices	12,448
Postage stamp sale agencies	69,341
Post boxes	75,649
Postal stations	10,822
Ordinary mail	
Ordinary mail routes	53,485 km.
Ordinary mails, acceptance	4,253,759,031

Ordinary mails, delivery	4,294,100,596
Parcels,	
Parcel post routes	53,508 km.
Parcels, acceptance	54,849,774
" delivery	58,472,813
Telegraph,	
Telegraph stations	7,816
Telegraph routes	35,494 km.
Telegraph lines	350,273 "
Telegraph apparatuses	10,511 sets
Telegrams, despatched	55,508,722
" arrival	57,707,719
Telephone,	
Telephone stations	6,354
Public telephones	2,471
Telephone subscribers	761,136
Applicants for the same	167,276
Telephone routes	61,637 km.
Telephone lines	5,655,382 "
Telephones	875,157
Telephone messages	2,434,522,844
Income from postage and fees	¥243,019,626
Expenditure	¥139,438,035

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 1903, 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	2,245
1882	5,527

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
1923	8,477

On March 31 of	No. of P. O.
1924	8,545
1925	8,633
1926	8,705
1927	8,916
1928	9,114
1929	9,393
1930	9,690
1931	9,954
1932	10,208
1933 (September)	10,557

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 shown a number of tables relating to the volume of business, and its growth, handled by the post offices:

NUMBER OF POST OFFICES (September, 1933)

	Japan Proper	Taiwan	Karafuto	Chosen	Kwantung Leased Territory	South Sea Islands
1st Class	84	11	4	95	53	9
2nd Class	222	10	—	—	—	—
3rd Class	9,641	158	72	—	—	—
Minor offices	610	—	—	12	151	—
Total	10,557	179	76	107	204	9

QUANTITY OF MAIL MATTER HANDLED (Internal)

	Ordinary mail	Parcel post	Total
1871-1872 { Despatched	565,934	—	565,934
{ Received	Unknown	—	—
1892-1893 { Despatched	277,805,743	40,755	277,846,498
{ Received	278,598,069	88,000	278,686,069
1897-1898 { Despatched	550,915,742	4,108,488	555,024,230
{ Received	539,540,474	4,060,797	543,601,270
1907-1908 { Despatched	1,357,447,195	17,676,745	1,375,123,939
{ Received	1,346,523,635	16,567,155	1,363,092,850
1912-1913 { Despatched	1,630,394,998	24,276,991	1,654,671,989
{ Received	1,594,850,576	23,008,666	1,617,859,242
1921-1922 { Despatched	3,992,769,865	48,758,863	4,041,528,718
{ Received	3,989,809,281	45,890,304	4,035,699,585
1926-1927 { Despatched	3,974,192,623	58,258,644	4,032,451,267
{ Received	3,906,474,525	55,852,079	3,962,326,604
1929-1930 { Despatched	5,096,611,368	63,650,583	5,160,261,951
{ Received	5,046,099,425	60,654,644	5,106,754,069
1930-1931 { Despatched	4,409,551,651	60,067,753	4,469,619,404
{ Received	4,437,939,812	57,724,887	4,495,664,693
1931-1932 { Despatched	4,409,202,875	53,201,931	4,548,404,806
{ Received	4,532,477,443	55,654,599	4,588,132,042
1932-1933 { Despatched	4,253,259,031	58,472,313	4,312,231,344
{ Received	4,294,100,596	54,849,774	4,348,950,370

DOMESTIC MAIL MATTER HANDLED IN 1932-1933

	Ordinary mail	Parcel post
Japan Proper { Delivered	4,229,055,097	58,041,936
{ Accepted	4,259,887,494	54,709,641
Taiwan { Delivered	69,559,433	643,211
{ Accepted	81,318,545	1,228,250
Karafuto { Delivered	20,196,901	186,250
{ Accepted	26,819,692	472,038
Chosen { Delivered	251,807,552	2,071,528
{ Accepted	269,739,991	3,050,192
Kwantung Leased Territory { Delivered	105,712,644	1,012,187
{ Accepted	104,778,787	2,800,756
South Sea Islands { Delivered	1,039,650	9,932
{ Accepted	1,669,783	36,177

Mails for collection of money and advertisement are included.

NUMBER OF INWARD AND OUTWARD FOREIGN MAIL FOR 1932-1933

	Ordinary mail	Parcel post
Europe { To	3,978,303	42,689
Europe { From	10,135,448	49,817
Africa { To	577,448	17,794
Africa { From	252,814	976
America { To	5,236,075	102,265
America { From	10,647,560	57,713
Asia { To	13,792,367	245,316
Asia { From	12,351,648	24,485
Australia { To	28,447	22,313
Australia { From	825,632	7,142
Total of outward foreign mail	24,703,934	430,377
Total of inward foreign mail	34,213,102	140,133

TIME REQUIRED FOR CONVEYANCE OF MAIL

To & from	From Various Places to Japan For Shipping from and Arrival at Yokohama	Days
Honolulu		9 days
Vancouver		11 "
Seattle		13 "
Chicago		15 "
Montreal		16 "
Boston		16 "
New York		16 "
For Shipping from and Arrival at Yokohama		
Brisbane		24 days
Mombasa (Kenya Col., B.E.A.)		37 "
Callao (Peru)		47 "
" (via Seattle)		37 "
Rio de Janeiro (via Siberia)		35 "
Valparaiso (Eastern Route)		65 "
" (via Seattle)		41 "
Port Said (via ports)		52 "
" (via Siberia)		24 "
Buenos Aires (Eastern Route)		70 "
" (via Seattle)		35 "
Surabaya		17 "
Sydney		26 "
For Shipping from and Arrival at Shimonoseki (North China Route)		
Dairen		3 days
Tsingtao		3 "
Tientsin		4 "
For Shipping from and Arrival at Moji and Kobé (Western Route)		
Shanghai		2 days
Hankow		10 "
Canton		8 "
Saigon		14 "
Hongkong		7 "

To & from	Days
Manila	10 days
Singapore	13 "
Penang	14 "
Colombo	20 "
Calcutta	24 "
Bombay	24 "

For Despatch and Arrival at Tokyo (Siberia Route)

To & from	Days
Harbin	5 days
Chita	6 "
Moscow	13 "
Leningrad	13 "
Berlin	14 "
Vienna	14 "
Hamburg	15 "
London	15 "
Paris	16 "
Oslo	16 "
Genoa	16 "
Warsaw	18 "
Rotterdam	15 "
Brussels	15 "
Madrid	17 "
Alexandria	24 "
Cape Town	28 "

Ordinary Mail In 1932-1933 the number of ordinary mails impossible of delivery or return was 701,852 (195 mails registered or with declared value included), 104,579 less than in the previous year, and their percentage was 0.0163. That of the parcels was 2,088 (104 parcels registered or with declared value included), 1,072 less than in the previous year, and the percentage 0.00381.

The number of ordinary mails posted per 10 of population was 642 and that of deliveries 648. Parcel posts accepted per 10 of population was 8.8 and deliveries 8.27.

Income from the sale of postage stamps was ¥85,876,777, an increase of ¥1,365,864 as compared with the previous year, and that from postal business ¥25,118,533, a decrease of ¥329,269 as compared with the previous year.

Special Mail The number of special handlings in the same year follows:

Registration	58,085,809
Declaration of value	2,590,284
Cash on delivery	398,491
Special delivery	230,730
Certificate of time of posting	4,675
Delivery certificate	2,511,714
Certification of letters and documents	1,546,123
Post restante	—
Special service of judicial documents	2,588,676
Documents of patents	—
Quick delivery	4,244,681
Air mail	284,665
Contract mail	211,903,586
Special urban mail	132,712,875
Mail without stamps affixed	253,290,233
Collection of cash	6,419,795

Tokyo Central Post Office The Tokyo Central Post Office, the largest in Japan, had its new reinforced concrete and steel frame building completed in August, 1933, six years after work was started in November, 1928. It is located at the central square in front of the Tokyo Railway Station. It is a five-story building having the total floor area of 11,034 tsubo. The building stands on an area of 3,554 tsubo of land. Business at the new building opened in November of the same year. The first, second and third stories are used for postal service business, the fourth story for general business, where also is located a dining-room, the fifth story for dormitory, and the ground floor for mainly mechanical equipment. The light, steam heating, cooling and ventilating equipments are installed. Water

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

supply, fire-proof, electric light and other indoor facilities are also complete. Handling of ordinary mail matters, like that of parcel posts, is done almost through mechanical operation such as by means of conveyors and automatic elevators. Mail matters collected from various post offices in the city are mechanically disposed of. Mail matters collected from post boxes are first shifted into five cases and carried to two story surveyors and then are properly handled. Large post cases arriving there from various parts by way of the Tokaido Line are carried by a surveyors and then are properly Tokyo Railway Station to the Central Post Office, and after being unloaded on steel belt conveyor, are carried to the first story by package elevator. Large post cases arriving from the Tohoku district by way of the Tohoku railway lines and those from various city districts are unloaded on belt conveyors through portable roller conveyor. Skip hoist is used for handling mail matters accepted at the windows. Mail matters destined to foreign countries, which are accepted at the windows, are carried to the three story by electro-post and handled there.

Between Japan proper and Chosen, the Kwantung Leased Territory, or the South Sea Islands only registered parcels are accepted at the same rates as for Taiwan or Karafuto.

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 telegraph 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

Year	Number	Increase in the year
1928-1929	7,283	138
1929-1930	7,458	175
1930-1931	7,634	176
1931-1932	7,712	78
1932-1933	7,816	104

NUMBER OF TELEGRAPH OFFICES, SEPTEMBER, 1933

	Japan proper	Taiwan	Karafuto	Chosen	China	Kwantung Leased Territory	South Sea Islands
1st class	4	1	—	—	3	4	—
Wireless	3	3	—	—	—	—	—
2nd class	6	—	—	7	—	—	—
Wireless { Land	18	—	—	—	—	—	—
{ S. S.	20	—	—	—	—	—	—
Post and telegraph offices	6,018	161	75	718	—	71	9
Minor offices	1,057	22	11	95	—	97	—
Wireless { Land	12	2	—	—	—	43	—
{ S. S.	690	8	—	—	—	—	—
Total	7,828	197	86	820	3	215	9

TELEGRAMS HANDLED IN 1932-1933

	Domestic messages		Foreign messages	
	Despatched	Delivered	Despatched	Delivered
Japan proper	54,065,046	56,281,163	1,254,430	1,248,925
Taiwan	1,595,662	1,591,727	80,206	42,882
Karafuto	848,510	829,502	408	1,108
Chosen	5,734,623	5,735,919	20,291	25,009
China	21,848	27,112	167,308	155,519
Kwantung Leased Territory	2,601,533	2,428,576	336,423	338,047
South Sea Islands	126,218	111,571	1,751	445

Note: Messages between Japan and China are included in "Domestic Messages."

NUMBER OF TELEGRAMS HANDLED BY INLAND POST AND TELEGRAPH OFFICES

(1928-1933)

Year	Despatch per 10 of population	Domestic		Transit
		Despatch	Arrival	
1928-29	10.7	65,327,772	67,943,869	12,407,374
1929-30	10.4	63,905,977	66,507,676	117,898,066
1930-31	9.09	57,382,506	59,925,616	107,287,804
1931-32	8.8	55,507,289	57,734,438	102,771,973
1932-33	8.3	54,065,046	56,281,163	101,297,228

LENGTH OF INLAND TELEGRAPH LINES

	1932-1933		As compared with the previous year
	Km.		
Land lines			
Aerial lines, routes	35,712,097	—	50,399
lines	235,079,008	—	129,288
Overhead cables,			
Routes	73,840	+	5,090
Cores	20,302,055	+	610,397
Underground lines			
Routes	707,159	+	17,000
Cores	94,892,298	+	1,288,646
Submarine cables			
Lines	15,285,886	+	2,468
Cores	18,356,687	—	55,962

PNEUMATIC TUBES

	1932-1933		As compared with the previous year
	Metre		
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	7,787
Leakage	Frequency	220
	Hour	2,570
Other	Frequency	889
	Hour	1,602
Total	Frequency	11,195
	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 APPARATUSES

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	30
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 between 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 sta-

tion was established at Ochiishi 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 Ochiishi 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 messages 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 facil-

ities 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, and Poland; 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		Domestic	Foreign
1928-29	{ Despatch 543,540	48,303	1931-32	{ Despatch 386,989	53,929
	{ Arrival 209,044	23,296		{ Arrival 290,559	24,097
1929-30	{ Despatch 379,297	49,413	1932-33	{ Despatch 387,366	50,403
	{ Arrival 282,954	23,160		{ Arrival 262,587	22,444
1930-31	{ Despatch 376,953	56,687			
	{ Arrival 302,153	25,039			

Telephone Service

The following tables show the development and present scope of the telephone service:

POST TELEGRAPH AND TELEPHONE OFFICES WHICH HANDLED TELEPHONE IN 1932-1933

	Exchange offices	Other offices
Japan proper	4,393	6,123
Taiwan	106	161
Karafuto	24	57
Chosen	168	709

	Exchange offices	Other offices
Kwantung Leased Territory	33	95
South Sea Islands	2	2

NUMBER OF INLAND TELEPHONE SUBSCRIBERS

	Total subscribers	Applicants for subscription
1928-29	655,721	195,332
1929-30	690,043	182,217
1930-31	715,020	176,900
1931-32	729,914	172,150
1931-33	761,136	167,276

NUMBER OF TELEPHONE SUBSCRIBERS IN THE EMPIRE 1932-1933

	Individual subscription	Party line subscription	Extention line subscription	Total
Japan proper				
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	761,136
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

	1931-1932	1932-1933
1928-1929	2,730,238,110	3,111,359,022
1929-1930	2,881,123,698	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	77,639,868	89,161	546	2,472,413	48,880
Karafuto	24,328,144	26,322	—	543,838	22,977

	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
Chosen	206,445,318	63,568	168	3,128,185	276,983
Kwantung Leased Territory	295,106,458	166,297	4,316	1,540,268	26,698
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	538,949	+ 7,941
.. on routes	276,879	— 26,305
Total	1,307,960	— 73,478
Faults per 1 subscriber	1.7	— .7

LENGTH OF TELEPHONE LINES IN THE EMPIRE 1932-1933

	Japan proper						
	Km.	As compared with the previous year	Taiwan	Kara-futo	Chosen	Kwan-tung Leased Territory	South Sea Islands
Land lines							
Aerial lines, routes	54,515	+ 1,530	3,030	286	9,307	2,412	20
.. lines	592,894	+ 8,999	26,045	4,680	57,310	31,966	35
Overhead cables, routes	4,007	+ 701	157	31	17	314	3
.. cores	1,310,181	+ 92,040	18,060	5,198	39,072	59,851	373
Underground lines							
Routes	3,115	+ 168	22	4	43	22	
Cores	3,532,307	+128,045	35,417	3,353	55,662	44,941	
Submarine cables							
Lines	117	+ 18	—	—	—	—	
Cores	4,898	+ 1,820	—	—	—	—	

NUMBER OF TELEPHONE APPARATUSES AND BATTERIES
IN THE EMPIRE 1932-1933

	Japan proper						
		As compared with the previous year	Taiwan	Kara-futo	Chosen	Kwan-tung Leased Territory	South Sea Islands
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	354
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 establish-

ed through the solicitation of the Communication 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.

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, Pennsyl-

vania. 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 328,000 subscribers; on March 31, 1934 it has 1,714,223. It had been decided from the very beginning to sell broadcasting directly to those most interested, the listen-

ers. This was done through subscriptions, a system which has become permanent. The would-be listener, paying a fee of one yen, applies to the Government for permission to own a receiving set. When sanction is obtained, the Broadcasting Corporation of Japan issues a subscription card and collects 75 sen monthly. Without cost to the Government and without selling programme time to advertisers, the association has thus been and is able to finance the development of broadcasting.

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 3,880 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. Regular daily exchange of radio broadcasting has been opened between Japan and Manchoutikuo.

Arrangement with Foreign Stations Japan at present has no regular international broadcasting except the arrangement with Manchoutikuo. The geographical position of Japan and the time handicap to which the country is subjected because of distance are considered the chief reasons. Japan is located in a remote corner of the earth for this sort of broadcasting. Asia, the nearest continent, is practically without radio development, and with programmes from the United States and Europe the time difference is a handicap. When it is 6 o'clock in the evening in Tokyo, the time the radio audience reaches its maximum number, it is 4 o'clock in the morning in New York and 8 o'clock in the morning in London. In the Olympic broadcasting, the location of Los Angeles made it possible to receive at noon in Tokyo what was transmitted at 7 o'clock in the evening Pacific time.

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			
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	1,627,856	307,693	23

INCOME AND DISBURSEMENT OF THE B. C. J.

	(In yen)		
	1932-1933	1931-1932	Increase or decrease
Income			
Subscription fee	10,484,750	9,647,639	+ 837,120
Miscellaneous	44,886	105,843	- 60,956
Total	10,529,646	9,753,482	+ 776,164
Disbursement			
Ordinary expenditure	6,383,705	5,467,276	+ 916,429
Extraordinary expenditure	845,338	377,596	+ 467,742
New stations and buildings	2,276,055	1,615,554	+ 661,401
Transferred to prefectural Governments	775,000	—	+ 775,000
Reserve fund	432,140	—	+ 432,140
Total	10,713,138	7,460,426	+ 3,252,712

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 Naotau 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 ¥2,446,022 (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

Freight and passengers carried by the State Railways in Japan proper since 1914-15 follow:

Fiscal years	Freight metric tons	Passengers (unit in 1,000)	Freight revenues (¥ 1,000)	Passenger revenues (¥ 1,000)	Daily average revenue per km. (In yen)
1914-15	85,887,241	166,092	51,750	54,671	88
1919-20	60,899,557	357,881	181,809	161,546	81
1921-22	58,812,888	454,585	167,241	214,519	99
1922-23	65,095,702	512,754	179,220	282,801	103
1923-24	65,818,955	579,288	178,109	249,568	102
1924-25	71,178,268	640,828	194,558	259,047	105
1925-26	78,090,274	683,568	198,786	262,074	103
1926-27	74,780,409	748,333	201,609	206,199	101
1927-28	78,691,788	795,722	211,740	271,523	101
1928-29	79,762,059	847,300	220,686	285,337	103
1929-30	77,224,824	862,989	217,549	279,030	99
1930-31	64,087,099	824,152	184,146	257,086	84
1931-32	60,590,307	787,223	176,128	280,972	77
1932-33	61,782,756	781,150	174,706	233,387	75

The prolonged economic depression, particularly in farming and industry, was reflected on the railway traffic business, as both the passenger fares and freight receipts went off sharply from the year before. The passenger fares for the term under review amounted to ¥203,542,267, showing a drop of ¥5,334,617, and freight receipts totalled ¥172,156,623, representing a drop of ¥1,582,738 from 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 Regional Office dur-

ing 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 year under review numbered 1,210,431 and motor car goods carried totalled 9,522 tons. The passenger fares amounted to ¥226,033 and freight receipts ¥16,651, with a total of ¥243,684. Details are:

MOTOR CAR FREIGHT SERVICE

Regional offices	Goods carried tons	Average daily goods tons	Freight receipts yen	Average ton receipts yen
Tokyo	275	1	514	1.87
Nagoya	5,646	15	11,018	1.95
Osaka	3,584	10	5,008	1.40
Moji	74	—	111	2.30
Total	9,552	26	16,651	1.74
Compared with the year before	(in.) 3,538	(in.) 10	(in.) 6,730	(in.) 0.00

MOTOR CAR PASSENGER SERVICE

Regional offices	Passengers carried	Daily passengers	Passenger fares	Daily fares
Tokyo	81,783	224	Y 12,580	Y 0.15
Nagoya	668,304	1,831	103,838	0.16
Osaka	249,042	682	48,362	0.19
Moji	211,209	579	61,244	0.29
Total	1,210,431	3,316	226,033	0.19
Compared with the year before	(in.) 425,904	(in.) 1,172	(in.) 71,941	(de.) 0.01

Ferry Service Ferry boats working under the Department of Railways carried for the year under review 6,879,969 passengers for which the total fares of ¥4,423,385 were received. Goods transported amounted to 2,288,498, and the total freight receipts were ¥4,723,870. As com-

pared with the year before, passengers decreased 62,558, or 0.9 per cent. and the fares decreased ¥11,922 or 0.3 per cent.; goods went off 146,927 tons or 6.4 per cent. and the receipts went off ¥470,583, or 9 per cent. Details follow:

Regional offices	Passengers		Goods	
	No.	Fares	Tons	Freights
Osaka	634,521	Y 250,200	107,729	Y 176,956
Moji	5,535,786	2,808,101	1,412,357	1,659,536
Sapporo	709,662	1,365,084	768,412	2,887,878
Total	6,879,969	4,423,385	2,288,498	4,723,870
Compared with the year before	(de.) 92,558	(de.) 11,822	(de.) 146,927	(de.) 470,583

Working Receipts The aggregate working receipts of the Department of Railways for the 1932-33 fiscal year amounted to ¥418,649,254, re-

presenting a drop of ¥8,411,874 from the preceding fiscal year. The receipts are summarized as follows:

Regional office	Railway receipts			Motor car and shipping receipts	Grand total
	Passenger fares	Freight receipts	Total		
Tokyo	¥72,843,440	¥31,162,287	¥104,005,727	Y 14,180	¥104,019,907
Nagoya	42,592,612	35,698,534	78,291,146	121,549	78,412,695
Osaka	53,332,286	27,931,730	81,264,016	514,974	81,778,990
Moji	32,554,214	29,165,824	62,020,038	5,133,958	67,153,996
Sendai	21,032,423	25,324,848	46,357,271	—	46,357,271
Sapporo	10,732,284	25,403,220	36,135,504	4,770,891	40,906,395
Total	233,387,259	174,706,443	408,093,702	10,555,552	418,649,254
Compared with the year before	(de.) 6,584,453	(de.) 1,417,797	(de.) 8,002,250	(de.) 309,624	(de.) 8,411,874

Accidents The number of accidents reported on the State Railways for the year was 4,172, and the casualties numbered 2,744. This shows a drop of 930 casualties from the year before. The railway suicides numbered 2,587, a gain of 156 over 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 ¥37,867,955 in contrast with ¥37,706,907 for the 1931-32 year and ¥41,715,774 for the 1930-1931 year. The length of new lines sanctioned, but not yet opened, at the end of the year totalled 3,690 kilometres, of which work was going on for 1,098.4 kilometres and no work was yet done on 455.33. These railways follow:

Construction offices	Lines under construction (in kilometres)	Lines not yet opened (in kilometres)
Hokkaido	133,870	132,640
Akita	74,870	35,220
Morioka	93,410	11,000
Nagasaki	75,900	22,660

Construction offices	Lines under construction (in kilometres)	Lines not yet opened (in kilometres)
Tokyo	123,800	28,790
Atami	35,110	15,760
Gifu	137,000	51,980
Yonako	69,920	50,410
Okayama	112,970	23,930
Yamaguchi	61,600	25,270
Kumamoto	179,450	57,720
Undecided office	—	—
Total	1,098,400	455,330

Total Length

The total business length of the State Railways for the 1931-32 fiscal year was 15,267 kilometres and the total length of line 24,993, showing an increase of 357 kilometres or 2.4 per cent. in the former and 410 kilometres or 1.7 per cent. in the latter. Details are:

Regional offices	Business mileage (in kilometres)	Total length of rails (in kilometres)
Tokyo	1,954.5	4,462.0
Nagoya	2,834.1	3,161.5
Osaka	2,810.9	4,711.7
Moji	2,656.2	4,313.1
Sendai	3,014.6	4,163.8
Sapporo	2,006.7	4,180.2
Total	15,267.0	24,993.0
Compared with the year before	(in.) 357	(in.) 410

NEW STATE RAILWAY LINES OPENED TO BUSINESS DURING 1932-33 FISCAL YEAR

Regional offices	Name of lines	Operating sections	Length in kilometres
Tokyo	Sobu-Honsen	Ochanomizu-Ryokoku	2.8
"	Narita-sen	Sasakawa-Matsuzishi	17.7
Total	2 lines		20.5
Nagoya	7 "		84.8
Osaka	13 "		140.7
Sendai	5 "		63.3
Moji	3 "		12.3
Sapporo	3 "		29.9
Grand total	34 "		357.5

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 at the end of the year under review was 3,906 steam locomotives weighing 329,320 tons; 131 electric locomotives weighing 9,272 tons; and 10 special locomotives weighing 210 tons, with the total of 4,094 weighing 339,250 tons, showing an increase of

No.	Dynamos Volume h.p.	No.	Prime motors Volume k.v.a.	No.	Converters Volume kw.	No.	Transformers Volume k.v.a.
12	122,244	12	100,654	106	301,638	302	640,800
—	(in.) 13,404	—	(in.) 11,112	(in.) 53	(in.) 27,110	(in.) 22	(in.) 28,483

Electric power supplied by the State Railways' electric power stations for the year 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 supply 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 supply 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 1932-1933 fiscal year totalled

78 cars and 4,482 tons from the year before.

The number of passenger cars at the end of the year was 10,424 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.

Electric Power

The State Railways had four stations, 31 sub-stations and 13 transforming stations at the end of the year with the following capacity:

¥117,058,967 (against ¥124,078,338 for the 1931-32 fiscal year and ¥123,089,803 for the 1930-31 fiscal year), while expenditures totalled ¥106,066,093 (against ¥110,969,380 for the 1931-32 fiscal year and ¥126,103,100 for the 1930-31 fiscal year).

As regards the stores account for the year under review, the revenues totalled ¥113,839,431 (against ¥114,972,608 for the 1931-32 fiscal year and ¥137,347,701 for the 1930-31 fiscal year), and expenditures totalled ¥115,030,275 (against ¥107,649,997 for the 1931-32 fiscal year and ¥136,951,065 for the 1930-31 fiscal year). In the profit and loss account, the revenue totalled ¥530,995,700 as against expenditures of ¥469,916,164. The balance of profits was ¥68,451,762. Details follow:

REVENUE

	1930-31	1931-32	1932-33
Traffic income	¥453,297,875	¥429,153,146	¥421,418,616
Miscellaneous income	7,872,645	7,839,219	8,241,333
Provisional income and advances repaid	91,402,014	91,614,410	101,335,951
Total	552,572,534	528,606,775	530,995,900

EXPENDITURE

	1930-31	1931-32	1932-33
Business expenses	¥288,765,321	¥269,656,045	¥267,958,803
Interest and loan payment	86,241,915	87,885,730	88,883,405
Payments and advances	94,449,903	95,087,080	105,843,171
Secret expenses	28,000	27,440	27,440
Subsidy for provincial railways	7,499,934	7,498,118	7,203,344
Profit	75,587,461	68,451,762	61,079,537

The gross profit of the year under review ¥160,872,178 represents 4.7 per cent. of the total assets of ¥3,413,786,013 at the beginning of the fiscal year. This shows a drop of 0.2 per cent. from the year before. The net profit for the year is ¥61,079,537, after expenses for super-

vision services, rail investigation, reserve funds, interest, debt accounts and subsidy for provincial railways are deducted from the profit.

Business income, expenses and profit for one business day per one kilometre on the basis of the foregoing figures follow:

FISCAL YEAR 1932-33

	Per day	Per business kilometre	Per day per kilometre
Business income '32-33	¥1,166,997	¥27,709	¥ 77
'31-32	1,184,536	29,283	80
Business expenses '32-33	726,252	17,244	44
'31-32	728,509	18,009	49
Profit '32-33	407,746	10,465	29
'31-32	456,025	11,272	30
Ratio of business expenses to business income '32-33	62.2	62.2	62.2
'31-32	61.5	61.5	61.5

The Assets The railway assets at the end of the 1932-33 fiscal year totalled ¥3,462,322,624. Details follow:

	Proper assets	Borrowed assets	Total
	(in yen)		
Values at the beginning of 1932-33 fiscal year	1,672,757,627	1,789,564,996	3,462,322,623
Gain during the year	70,743,419	82,936,535	153,679,950
Decrease " "	18,618,980	33,961,087	52,580,067
Values at the end of 1932-33 fiscal year	1,724,882,067	1,838,540,444	3,563,422,511
Values at the end of 1930-31 fiscal year	1,689,593,577	1,743,226,538	3,432,820,115

The value of fixed assets at the beginning of the 1932-33 fiscal year totalled ¥3,413,786,013, showing an increase of ¥66,393,551 during the period. At the end of the same

fiscal year the value totalled ¥3,503,893,026, in contrast with ¥3,413,786,013 for the 1931-32 fiscal year and ¥3,503,893,026 for the 1930-31 fiscal year.

Private Railways

General Private railways which acquired permission for construction during the 1932-33 fiscal year numbered 2, with the total length of 2.41 kilometres. Their construction expenses were estimated at ¥120,598, showing a decrease of ¥9,637,888 in the estimated cost of construction when compared with the previous year. Private railways which lost the privilege of construction for not

Railways in operation
Compared with the year before
Railways not opened yet
Compared with the year before

having started work within the required period numbered 26 within the year under review, and their estimated cost of construction was ¥50,315,598, showing a decrease of 1 railway and estimated construction cost of ¥8,386,829 from the year before. During the period 15 private railways of 64 kilometres commenced operation. The status of provincial railways in operation and those not yet opened at the end of the 1932-33 fiscal year follows:

No.	Length (kilometres)	Construction cost (in yen)
265	7,242	1,015,418,473
(in.) 2	(in.) 48	(in.) 29,536,969
183	3,745	800,956,930
(de.) 15	(de.) 590	(de.) 41,555,946

Traffic Looking over the private railway passenger traffic for the year under review, 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-

bered 1,844 and the number of casualties 937.

Rolling Stock The number of rolling stock at the end of the fiscal year was 994, of which steam locomotives numbered 809, electric locomotives 179 and gasoline 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 11,558 with total loading capacity of 113,185 tons, showing a drop of 11 cars and 666 tons compared with the year before.

Finance Business income and expenses for the private railways for the year follow:

	Total (in yen)	Compared with 1932-33 fiscal year (in yen)
Business income:		
Passengers	57,055,467	(de.) 1,739,043
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

	Total (in yen)	Compared with 1932-33 fiscal year (in yen)
Business profit	34,332,536	(de.) 856,115
Other	24,009,786	(de.) 1,667,885
Interest payment, etc.	38,490,025	(in.) 5,544,387
Government subsidies	7,168,846	(in.) 7,168,846
Balance brought forward from the preceding year	4,766,394	(de.) 3,623,289

Profit disposed of as follows:

	(in yen)	(in yen)
Legal reserve	1,606,634	(de.) 251,960
Voluntary reserve	2,597,572	(de.) 565,161
Bonuses	901,851	(de.) 129,292
Dividends	28,342,075	(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	366,389,733	(in.) 5,027,752
Construction expenses for lines in operation	960,582,067	(in.) 24,063,759
Estimated construction expenses for lines yet unopened	21,433,830	(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.) 3,911,696
Others and total	2,104,840,840	(in.) 67,442,256

LIABILITIES		
Capital	1,213,613,425	(in.) 54,788,553
Legal reserve	28,554,989	(in.) 1,985,014
Debentures	320,224,871	(de.) 2,371,539
Loans through mortgage syndicates	125,184,302	(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	19,633,559	(de.) 1,140,839
Others and total	2,104,840,840	(in.) 67,442,256

Employees The private railway employees numbered 41,572 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 Construction expenses for the tramcar service in Japan for the 1932-33 fiscal year totalled ¥6,205,529, showing a drop of ¥13,759,429 from the year before. Eight lines with 21 kilometres were sanctioned for construction for the period, while 12 lines with 50 kilometres had their franchises cancelled during the period. Their construction expenses were estimated at ¥2,426,290, showing a drop of two lines, but an increase in expense of ¥1,076,862 as compared with the year before. Ten lines of 16 kilometres opened to service. The lines in operation at the end of the year numbered 144 with 2,661 kilometres, and a total capitalization of ¥2,157,203,439, representing a decrease of two lines of 14 kilometres and an increase of ¥11,327,100 as compared with the year before. Details of the lines in operation were:

Kinds	No. of lines	Length in kilometres	Capitalization
Electric	94	2,098.17	¥2,109,897,376
Steam	8	127.30	1,861,000
Steam & gasoline	8	90.02	3,825,000
Gasoline	15	238.68	23,864,156
Horse-power	16	153.57	7,703,000
Man-power	7	31.26	310,653
Total	144	2,739.00	2,147,261,195

Kinds	No. of lines	Length in kilometres	Capitalization
Compared with the year before	(de.) 2	(de.) 18	(in.) 49,777,700

Passenger Traffic Length of operation of passenger cars for the year

Kinds	Passengers carried	Passenger fares	Average fare of one passenger
Electric	1,463,680,063	¥98,684,908	¥0.067
Steam	1,295,780	172,347	0.133
Gasoline	2,494,325	258,948	0.104
Horse-power	2,021,507	23,754	0.117
Man-power	1,656	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
Gasoline	183,833	314,205	1.709
Horse-power	76,956	63,186	0.820
Man-power	93,821	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

Accidents Tramear accidents for the year numbered 10,039 and casualties numbered 4,325. The number of locomotives were 118 and that of passenger cars 6,623 with accommodating capacity for 482,445, the number of goods cars 1,800 with loading capacity of 6,155 tons.

Business Profit The business profit for the year 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 4.5 per cent. Details follow:

Kinds	Business revenue (in yen)	Business expenditure (in yen)
Electric	108,548,051	67,066,647
Steam	835,570	282,558

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	Business revenue (in yen)	Business expenditure (in yen)
Gasoline	608,436	611,002
Horse-power	107,792	102,676
Man-power	72,187	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 ¥24,853,608 (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 ¥1,325,789)
Voluntary "	4,665,743 (a drop of ¥ 679,354)
Bonuses	1,862,262 (a drop of ¥ 475,969)

Others	26,172,278 (a drop of ¥1,668,372)
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:

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.) 16,907,103
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	184,232,867	(in.) 5,010,893
Suspense account	40,629,327	(de.) 16,316,829
Deposits	52,659,913	(de.) 21,158,388
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.) 28,688,185
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.) 9,778,691
Loans through mortgage syndicates	82,733,137	(in.) 14,145,169
Other loans	274,267,539	(de.) 18,055,532
Bills payable	111,541,225	(in.) 17,076,376
Money unpaid	46,899,794	(de.) 10,620,524
Suspense accounts	49,283,555	(in.) 4,547,759
Net profit for the term	43,363,136	(de.) 6,373,186
Others and total	4,068,282,998	(de.) 58,529,282

Tourist Industry

Of the number of foreigners visiting Japan, Chinese, Americans and

Britishers are the most important. During the 1932-33 fiscal year Chinese accounted for 37 per cent. of all foreign visitors to Japan, next came the Americans 21 per cent., Britishers being third with 17 per cent. The number of Chinese and American visitors during the last three years follows:

	1st half	2nd half	Total
Chinese:			
1930-31	7,718	6,925	14,543
1931-32	8,000	4,878	12,878
1932-33	8,018	4,774	7,792
Americans:			
1930-31	5,301	3,220	8,521
1931-32	2,911	3,251	6,162
1932-33	1,720	2,590	4,310

Trend of Tourists There was a great decrease in the number of Chinese visiting Japan during the first half of 1932-33, as compared with figures of the previous year, but during the second half of the year the number of Chinese visitors regained and equalled that in the corresponding period of 1931-32. Throughout the year their number went off 39 per cent. Americans decreased 40 per cent. during the first half from the year before, and 26 per cent. in the second half, the decrease throughout the year being 30⁴ per cent. British visitors remained almost stationary as the year before. Among all nationalities visiting the country during the year under review, a drop of 23 per cent. was witnessed, a phenomenon of the tourist industry throughout the world. Of the whole visiting foreigners, 21 per cent. came here with the sole object of sightseeing. Those whose stay lasted for less than 15 days, less than three months, and more than three months, respectively, follow:

LAND AND AIR TRANSPORTATION

	Less than 15 days	Less than 3 months	More than 3 months	Total	Year before
Americans	2,700	866	744	4,310	6,162
British	1,742	1,115	668	3,525	3,525
German	241	247	233	721	672
French	183	168	127	478	462
Soviets	556	220	290	1,066	1,082
Chinese	632	525	6,635	7,792	12,878
Others	1,643	756	669	3,068	2,404
Total	7,697	3,897	9,366	20,960	27,273

Objects of Visits Their objects for coming to Japan are tabulated as follows:

	Sightseeing	Official business	Commercial business	Other	Total
Americans	2,117 49%	54 1%	509 12%	1,630 38%	4,310 100%
Canadians	89 26%	9 3%	25 7%	215 64%	338 100%
British	1,263 36%	32 1%	433 12%	1,797 51%	3,525 100%
German	173 24%	15 2%	150 20%	383 54%	721 100%
French	124 26%	19 4%	55 12%	290 58%	478 100%
Soviets	25 2%	249 23%	200 19%	592 56%	1,066 100%
Dutch	75 24%	6 2%	46 15%	190 59%	317 100%
Hindoos	31 4%	—	87 12%	597 84%	716 100%
Filipino	46 40%	0	8 6%	61 54%	115 100%
Chinese	96 1%	73 1%	483 6%	7,140 92%	7,792 100%
Others	356 23%	51 3%	279 17%	896 57%	1,582 100%
Total	4,305 21%	509 2%	2,275 11%	13,781 66%	20,960 100%

Ports of Landing Foreigners coming to Japan proper from Korea, Formosa, the Kwantung Leased Territory, Karafuto and South Sea is-

	Yokohama	Kobe	Shimonoseki	Moji	Others and total
Americans	1,676	1,662	444	247	4,310
Canadians	138	188	45	10	338
British	864	1,815	217	97	3,525
Germans	185	248	95	17	721
French	83	191	42	17	478
Soviets	63	225	282	74	1,066
Dutch	59	154	1	9	317
Hindoos	33	263	2	11	716
Filipino	67	43	—	—	115
Chinese	786	5,193	537	338	7,792
Others	268	529	97	59	1,582
Total	4,222	9,961	1,762	489	20,960
Year before	4,643	11,194	3,020	6,021	27,273

lands are included in the figures. Visitors landed at various ports for 1932-33 follow:

RAILWAYS IN COLONIES

Money Expended Money expended by foreigners in Japan based on figures prepared by the Ministry of Finance for the last three years follow:

	(in ¥1,000)	1929-30	1930-31	1931-32
Money spent by foreigners on sightseeing		29,932	30,405	23,317
Money spent by crews of foreign ships		3,354	3,097	2,669
Money spent by foreign students		1,291	1,600	1,160
Money spent for evangelic purposes, etc.		8,305	10,985	11,009
Money spent by diplomatic services		5,101	4,643	4,449
Total		57,983	50,730	42,603

Miscellaneous

Large Order of Rolling Stock The South Manchuria Railway Co. recently placed an unusually large order for rolling stock amounting to ¥10,000,000. Accordingly, six companies, viz., Nippon Sharyo, Kawasaki Sharyo, Hidachi Seisakusho, Osaka Iron & Steel, Tanaka Sharyo, and Kisha Seizo Kaisha held a conference as regards its allotment, and an agreement was arrived at whereby each company would accept about 60 cars.

No Accident in Tokyo Central Station Tokyo Central Station was honoured with a certificate of merit for there occurred no accident during five months since August 17th, 1933. From this station 110 steam trains and 1,850 electric trains leave every day, while 180,000 people pass through it in a day.

Ginza and Shimbashi Subway Stations Opened The subway between Kyo-

bashi and Owaricho in Tokyo was completed and opened on March 3, 1934. This also serves to relieve the traffic congestions at Owaricho. The subway provides two stories, the lower of which is for the cars, while the upper story provides not only safe crossways for the people who go to Ginza for shopping and strolling, but also space for shops, etc. as well. On the day the station was opened, the temperature underground was 18° C, while the streets on the surface were covered with snow.

On 21st June, the line between Ginza and Shimbashi was opened. With the opening of this section, the first programme of the subway construction work of 8 km. has been completed. It takes only 16 minutes to get to Shimbashi from Asakusa, the other terminal. The construction was started in September, 1925, at Asakusa, and the total expenses defrayed so far amounts to ¥32,000,000.

Railways in Chosen, Taiwan, Manchuria, etc.

Chosen

The first railway enterprise in Chosen dates back to 1890, 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 mili-

tary authorities of Japan to build the Keijo-Fusan, Keijo-Shingishu and Masan lines which were respectively opened to traffic in 1904 and 1905. 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-Kwainai line was opened. At the end of the 1932-33 fiscal year the total length of the State-owned lines in operation in Chosen was 3,162.2 kilometres consisting of 2,902 kilometres of 1,435 metre gauge lines and 260.2 kilometres of 0.762 metre gauge.

Management From consideration of economic relations and facilities of communication the management of railways in Chosen was entrusted to the South Manchuria Railway Company on August 1, 1917. According to a contract concluded between the Government-General of Korea and the South Manchuria Railway Company, the entire management, except plans of construction and improvement and the ways and means thereof was entrusted to the latter for a period of twenty years on condition that out of the net earnings the equivalent of 6 per cent. on the total amount of capital furnished by the Government-General from the fiscal year 1911-12 should be paid to the Government-General each year, and that in the event of the profits earned falling short of that amount in any one year the deficit to be made good out of the profits of the succeeding years. Should, however, the profit exceed the amount required, half such excess was also to go to the Government-General. This arrangement, however, occasioned some inconveniences in settling accounts, so that another contract was concluded

between them in July, 1918, relieving the company from paying over one-half the excess profit obtained and at the same time requiring it to bear construction expenses.

Contract Revised The term of the above contract having expired a new contract for three years, beginning with the year 1921, was concluded in August, 1920, on the basis of the old one with the provision that the company pays to the Government-General the equivalent of 6 per cent. on the total amount of capital advanced by it up to the end of the 1920-21 fiscal year, and 4 per cent. on capital furnished by it in each subsequent year. In view of changing circumstances it was considered advisable to shift the management to the direct control of the Government-General, and it was decided to discard the system of commissioning the South Manchuria Railway with the entire management of the railways in Chosen from March 31, 1925. At present, all the Government railways in Chosen are under direct control of the Railway Bureau, a department of the Government-General, which started its business on April 1, 1925, the day when the new railway administration was organized in accordance with Imperial Ordinance No. 84.

Hotels and Private Railways As an adjunct to the railway business a hotel was started in Fusan in 1912 for the convenience of foreign tourists, by making use of the upper stories of the station building there; later a similar provision was made in Shingishu. In 1914 the Chosen Hotel was established on a large scale in Keijo and its branches at Onseiri and Choanji near Kongo-san or Diamond Mountains were opened for sightseers. Another hotel has been run at Heijo since 1922. The total mileage of private railways open to traffic on December 1, 1933

was 1,172.7 kilometres, the length of lines under construction and lines granted charter 352.2 kilometres, the length of tramways 78.6 kilometres and the total length of these 1,603.5 kilometres.

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 section completed in 1912, the Taito line in 1917 and the Giran line in 1924. The total length of the Government lines now is 883.34 km.

Karafuto Railway

The first railway in Karafuto (Japanese Saghalien) was constructed by the Military Department in 1906 between Otomari, formerly known as Korsakova, 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-Sakachama section being completed, the Otomari-Sakachama section, 94.13 km. which now forms the trunk line in the island's communication, was opened to traffic. Construction work has been continued ever 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. The lines in operation now total 342.9 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 Teruchi, 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. The total length of lines open to business on August 31, 1930, was 1,125.1 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 1915.²

¹ It was further increased to 800 million yen in June, 1933.

² See Chapter on Manchoulikuo.

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 motor 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 4,688 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 background. 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 was taken by the National Resource Bureau of the Cabinet toward the close of 1933. Ac-

ording to this, the number was 106,788, including those cars in the territories. Figures in the following table are those in the principal prefectures:

	Passenger cars	Trucks	Special cars	Total
Tokyo prefecture	15,781	7,535	265	23,581
Osaka ..	4,595	1,809	179	7,092
Hyogo ..	2,780	1,320	107	4,225
Kanagawa ..	2,558	1,490	141	4,189
Aichi ..	2,358	1,694	88	4,140
Shizuoka ..	2,066	1,377	90	3,433
Fukuoka ..	2,348	820	88	3,256
Kyoto ..	2,000	934	80	3,012

Tokyo prefecture had the most and next came Osaka, Hyogo, Kanagawa, Aichi, Shizuoka, Fukuoka, and Kyoto prefectures in the order named. The outstanding fact of the 1933 investigation was that the ratio of increase as a whole has become extremely small. The ratio was 28 per cent. for 1927; for 1928 it was 24 per cent., for 1929, 32 per cent., for 1930, 10 per cent., for 1931 9 per cent., for 1932 5 per cent., and 1933 only 2.8 per cent.

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.

According to the most recent figures, the number of motor car operators on a commercial basis, at the end of 1929, was as follows:

Initial expenses	Number of business operators
Up to ¥ 3,000	980
Up to 5,000	743
Up to 10,000	726
Up to 100,000	847
Up to 500,000	7
More than 500,000	49
Total number of operators	3,252

It can be seen from these figures that operators of small means were in the majority. To the present, State railways, because they are operating mostly a main line business, have suffered less from the competition of motor transport than provincial railways, but with the construction of a better network of roads the situation is bound to become more serious as time goes on.

Motor Vehicles in Tokyo

The number of motor vehicles in the old city limits of Tokyo, since 1914, follows:

Year	Passenger cars		Motor trucks		Total
	Private use	Business use	Private use	Business use	
1914	260	71	—	—	330
1919	747	720	24	53	1,544
1920	1,124	819	76	104	2,123
1921	1,303	972	133	116	2,524
1922	1,228	1,205	172	222	2,827
1923	1,517	1,291	332	220	3,359
1924	1,217	1,509	472	465	3,663
1925	1,336	2,101	479	1,263	5,179
1926	1,383	2,547	416	1,682	6,028
1927	1,553	3,473	430	2,003	7,459
1928	1,572	5,086	411	2,364	9,433
1929	1,603	6,250	400	2,978	11,231
1930	1,380	6,907	317	3,488	11,792
1931	1,359	7,434	270	3,416	12,479
1932	1,252	8,951	207	3,556	13,966

NUMBER OF MOTOR BUSES

Year	Tokyo	Tokyo	Total
	city buses	Motor Bus Co.	
1924	302	—	302
1925	342	232	574
1926	344	245	589
1927	381	288	669
1928	572	311	883
1929	584	304	888
1930	652	419	1,071
1931	654	430	1,084
1932	678	401	1,179

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 and 3,439 in 1932.

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	Quantity
1918	7,661	—
1919	11,228	—
1920	10,478	—
1921	8,067	—
1922	7,309	—
1923	13,482	—
1924	21,186	—
1925	11,682	—
1926	13,722	—

Year	Value
1927	18,321
1928	22,344
1929	23,008
1930	20,773
1931	16,529
1932	14,321
1933	13,370

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.

Number of Cars and Population

According to the Police Bureau of the Home Ministry, the number of motor cars in Japan proper at the end of 1931 totalled 97,256, which meant one car for 762 people since the total population in Japan proper on October 1, 1930, was 64,450,005. A comparison of the number of different kinds of cars in Japan proper and its colonies for 1930 and 1931 follows. The figures are those of the National Resource Bureau of the Cabinet:

Kinds of cars	Japan proper		Japan's colonies	
	1930	1931	1930	1931
Ford	9,544	8,898	604	492
Chevrolet	8,927	8,143	854	570
Buick	572	469	36	30
War	509	368	29	24
Essex	507	310	35	32
Whippet	991	599	106	21
Dodge	557	407	45	27
Chrysler	287	237	13	7
Nash	240	179	15	9
Hudson	150	100	7	6
G.M.C.	74	108	13	5
Citroen	180	160	—	—
Oldsmobile	192	107	13	8
Pontiac	171	132	28	11
Geo	157	119	10	5
Packard	115	101	1	2
Willys-Knight	285	144	6	3
Wolsley	61	71	—	—
Graham	33	41	—	—
Oakland	140	70	9	15
Walden	126	107	7	16

Kinds of cars	Japan proper		Japan's colonies	
	1930	1931	1930	1931
Plymouth	216	209	33	7
Federal	63	71	3	1
Graham-Police	142	99	9	2
Fiat	103	87	5	—
Austin	84	79	2	13
Falcon Knight	27	29	—	—
White	26	16	—	—
De Soto	90	79	14	7
Mack	22	21	—	—
Hupmobile	56	38	1	1
Fordson	10	14	—	—
Chandler	1	—	—	—
International	3	14	36	5
Durant	80	38	11	3
Dat	69	31	8	4
Cadillac	29	23	—	—
Erskine	32	12	4	4
Republic	8	6	6	1
Morris Cowley	15	18	—	—
Pierce Arrow	8	10	—	—
Others	692	605	83	45
Total	25,982	22,359	2,147	1,366

(Used by Government)
(1,245) (770) (2,147) (1,366)

The number of motor fire engines in Japan proper at the end of 1931 totalled 1,040 in contrast to 840 at the end of 1930, 692 at the end of 1929 and 533 at the end of 1928. Of the 1931 figure, Hokkaido had the largest number of 128 and Tokyo prefecture was second with 120. The number of motor buses in operation in Japan in May, 1932, was 1,717 and that of bus operators was 116. Omnibus passengers in Tokyo were:

Year	Old Tokyo	Old Tokyo	Total
	city	suburbs	
1921	12,207,670	—	12,207,670
1922	15,642,678	—	15,642,678
1923	19,976,163	1,503,416	21,479,579
1924	35,469,140	1,503,090	36,972,230
1925	58,571,035	1,791,475	60,362,510
1926	63,523,398	9,048,980	72,572,378
1927	79,800,332	10,897,270	90,697,602
1928	104,821,515	13,446,515	118,268,030

The Tax In Tokyo the annual tax on a Model T Ford is over ¥500, but the tax varies with different prefectures, for instance in Yokohama the tax on the same model is about half the above. General Motors and

Ford have been selling on the time payment basis and this method promises to become more important in the future. One scheme worked out to make time sales possible involves "renting" the car to the new owner and executing an attachment on it at the time of the sale. The notice of attachment, which must be placed in the car, may interfere with some sales, as the owner may feel that he loses "face" by having it in view.

Subsidies The Ministry of War has for some years past been giving liberal subsidies to three companies, the Ishikawajima Motor Company,

the Dat Automobile Company and the Tokyo Gas Denki Kogyo Kaisha. All these companies have been specializing in building buses and trucks, the first having produced the Wolseley type of cars and trucks under licence from the Ministry of War which holds the patent rights for Japan. Early in 1933 the first two companies were amalgamated under the name of the Japan Automobile Industry Company and will at first turn out trucks only, but later will go into the passenger-car business.

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. Koba

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 combat 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 80 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 Hosen 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.

Past and Future of the Regular Air Service

The Asahi's Activities A regular air mail service was started between Tokyo and Osaka by the Asahi Shimbun in January, 1923, for the first time in this country, after obtaining permission from the authorities in the latter part of December of the preceding year. Subsequently, the Japan Air Transport Institute began to engage in regular air traffic between Osaka, Takamatsu and Tokushima (later altering the points to Sakai, Tokushima and Takamatsu) and the Japan Aerial Navigation Company between Osaka and Fukuoka. In 1927, the Asahi Shimbun purchased a Dornier-Merkur plane and a Comet plane and the Japan Aerial Navigation Company a Dornier-Superwal plane and started the transportation of passengers. On July 15, 1929, the said company began the carrying of passengers between Tokyo, Osaka and Fukuoka, later extending the service to Seoul and Dairen. With a view to conducting an air passenger service between Japan and Shanghai, it carried on negotiations with the National Government at Nanking through the Foreign Office, but failed to arrive at any agreement, only several trial flights being made between the two countries during that year. Since the outbreak of the Sino-Japanese dispute, this project has be-

come almost impossible of realization, but the operation of this aerial route is earnestly hoped for by Japanese aviation circles generally as a step forward towards participation in a world air service.

Trunk Air Line The former Saito Cabinet had in contemplation the opening of a trunk air route that traverses Japan from north to south, connecting Sapporo, Tokyo, Osaka, Fukuoka and Taiwan. In the event of this plan being realized, it will mark a new epoch in the history of aviation in Japan. It is projected under the plan (a) to open a new air route between Fukuoka and Taiwan (flying grounds in Taiwan will

be constructed by the Government-General of the Island, and landing places will be laid out in the Loochoo Islands and at Naha in Okinawa); (b) to construct flying grounds in Nagoya and Hiroshima; (c) to open a new air route between Sapporo and Tokyo (flying grounds will be constructed in Sapporo, Aomori and Sendai); (d) to improve the flying ground at Haneda near Tokyo; and (e) to construct a flying ground on land in Fukuoka, the existing military flying ground at Tachiarai, which civilian planes now use by special permission, will be closed after the completion of the new flying ground.

REGULAR AIR SERVICE ROUTES IN JAPAN

Route	Distance (in kilometres)	Time required for flying	Carrying	Company or body operating route	No. of flights
Tokyo-Osaka	425	2 h. 30 m.	Passengers, freight and mail	Japan Air Transport 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.	"	"	"
Shinwiju-Dairen	240	1 h. 40 m.	"	"	"
Osaka-Fukuoka	500	"	"	"	Not yet opened
Fukuoka-Shanghai	950	"	"	"	"
Osaka-Takamatsu	140	1 h. 10 m.	"	Japan Air Transport Institute	Once (both ways) per day (except Sundays)
Takamatsu-Matsuyama	150	1 h. 10 m.	"	"	"
Tokyo-Shimoda	105	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 Flying Ground. The Tokyo flying ground is situated at Suzuki-Shinden, Haneda-machi, Tokyo prefecture (Lat. 139° 40' E. and Long. 35° 30' N.). It is a flying ground on land and covers an area of 561,000 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 Flying Ground. The Osaka flying ground is situated at Kizugawajiri, Funa-machi, Minato-ku, Osaka (Lat. 135° 23' E. and Long. 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 (Lat. 130° 26' E. and Long. 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 situated at Kita Nijushijo and Nijugojo, Sapporo. It is a flying ground on land and its runway extends for 190 metres from east to west and 360 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 ex-

ist 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	JXT	Otemachi Nichomé, Kojimachi-ku, Tokyo.
Hakoné	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	JXJ	Itsuhara-machi, Shimokata-gun Nagano prefecture.
Tomiyé	JXI	Minami Tomiyé-mura, Matsuura-gun, Nagasaki prefecture.
Urusan	JXY	Hokumen-Dotei, Urusan, Urusangun, Keisho-Nando (South Kyongsang-do), Chosen.
Keijo	JBM	Hommachi Itchomé, Keijo (Seoul), Keikido (Kyonki-do) Chosen.
Dairen	JBB	Kambu-dori, Dairen, Kwantung province.

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	Tauruta, O-oka-mura, Sunto-gun, Shizuoka prefecture.
Hamamatsu	Matakogawa, Tomizuka-mura, Hamana-gun, Shizuoka prefecture.
Kameyama	Nomura, Kameyama-machi, Suzuka-gun, Miyé prefecture.
Azukijima	Shikai-mura, Azuki-gun, Kagawa prefecture.
Imaharu	Ohama, Chikami-mura, Koshichi-gun, Ehimé prefecture.
Murozumi	Aburada, Murozumi-machi, Kumaké-gun, Yamaguchi prefecture.
Nakatsu	Tsunoki, Nakatsu-machi Shimoké-gun, Oita prefecture.
Yukibashi	Yukibashi, Yukibashi-machi, Kyoto-gun, Fukuoka prefecture.
Urusan	Sansanri, Urusanmen, Urusan-gun, Keisho-Nando (South Kyongsang-do), Chosen.
Kwakan	Nasanri, Kwakanmen, Yeido-gun, Chusei Hokudo (North Choongchong-do), Chosen.
Tsiden	Kudori, Gainamen, Taidén-gun, Chusei Nando (South Choongchong-do), Chosen.
Ten-an	Seiseiri, Ten-anmen, Ten-an-gun, Chusei Nando (South Choongchong-do), Chosen.
Shariin	Tetsuzanri, 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.
Shin wifu	Mirokudo, Kojomen, Gishu-gun, Heian Hokudo (North Pyong-an-do), Chosen.
Pitzuwo	Pitzuwo, Kwantung Province.

Civilian Aeroplanes

Civilian aeroplanes, for which cer-

tificates 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	150
	Hydroplanes		
Total	Aeroplanes	139	167
	Hydroplanes		

Civilian Aviators in Japan Licensed Japanese civilian aviators

are as follows:

Classification	1st class	2nd class	3rd class	Total
Aeroplane and hydroplane pilots	216	227	—	443
Navigators	25	168	—	193
Mechanics	—	—	—	133
Dirigible balloon pilots	—	—	2	2

Aerial Lighthouses

In order to extend night flying the first necessity is the establishment of aerial-lighthouses, and 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 Hakoné (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 Place	Prefecture
Totsuka	Kanagawa
Hiratsuka	"
Manazuru	"
Jikkoku	Shizuoka
Numazu	"
Tagonoura	"
Yaizu	"
Kanaya	"
Hamamatsu	"
Toyohashi	"
Manzu	"

Tokyo-Osaka Place	Prefecture
Chitamotomiyayama	Shizuoka
Akeno	Miyo
Chisezaki	"
Seki	"
Kata	"
Tsuge	"
Uyeno	"
Kasagi	Kyoto
Ikomayama	Nara
Osaka-Fukuoka Place	
Suma	Hyogo
Murozu	"
Tamatsu	Okayama
Okayama	"
Hayashima	"
Kasaoka	"
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 mat-

ters 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, Shibuya, 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 Agriculture 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 Chuzaburo 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 Inouyé
Japan Flying School	Tachikawa-machi, Tokyo prefecture.	Tamotsu Aiba
Kita-Nippon Flying School	Ujjina-mura, Sapporo-gun, Hokkaido.	Takanori Nakamura
Nishida Aeroplane Institute	Kisugawajiri, Funamachi, Minato-ku, Osaka.	Chuyémon Nishida
Hamamatsu Aeroplane Works, Ltd.	Tomuzuka-mura, Hamana-gun, Shizuoka prefecture.	Tetsuo Hasegawa
Dai-ichi Aeronautical School	Funabashi-machi, Chiba prefecture.	Yetsutaro Munenato
Nagoya Flying School	Obatagahara, 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	Tomokagé Sakata
Japan Light Aeroplane Club	Saminuma, Tanuma-machi, Chiba prefecture.	Otojiro Ito
Misono Flying School	Tachikawa-machi, Tokyo prefecture.	Nishio Suzuki
To-a Flying College	Tsudanuma-machi, Chiba prefecture.	Sami Kawabé
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
Watanabé Iron Works, Ltd.	Naka-mura, Tsukushi-gun, Fukuoka prefecture
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 Inouyé 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 Rica 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 Whampoa.

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 purser 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. Haswell, 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-Kobe-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. Furthermore, 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 Kaiun 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.

1933 Shipping The tonnage of Japanese freighters working various services, home and abroad, is smaller than the last two years, due to a decrease of old cargo boats which

were eliminated by scrapping in exchange for construction of better Diesel-engined ships in accordance with the Ship Improvement Law. Details of freighters working various services follow:

Services	Mar. 1932	Mar. 1933	Mar. 1934
(In 1,000 tons)			
European	348	450	334
North American-Atlantic	209	271	411
Japan-North American Pacific	468	308	45
Australian and Indian	338	397	27
Nearseas	1,340	1,290	1,110
South Seas, Straits Settlements	374	351	361
In docks	178	201	12
Tied-up ships	161	55	2
Others	21	66	1
Total	3,445	3,391	2,322

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 Kankai Yusen Kaisha, the Harada 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 subsidized steamship services follow:

NIPPON YUSEN KAISHA

Lines	Number of ships on subsidized lines	Number of trips
Yokohama-London	10 ships (each over 9,000 tons)	26 trips a year
North American San Francisco	3 ships (each over 13,000 tons)	17 " " "
North American Seattle	3 ships (each over 11,000 tons)	21 " " "
South American West Coast	4 ships (each over 7,000 tons)	7 " " "
Yokohama-Melbourne	3 ships (each over 5,000 tons)	90 " " "
Yokohama-Shanghai	2 ships	3 trips a month

OSAKA SHOSEN KAISHA

South American East Coast	5 ships (each over 7,000 tons)	11 trips a year
African East Coast	5 ships (each over 9,000 tons)	12 " " "
Dairen	4 ships (each over 5,000 tons)	2 trips a week
Osaka-Naha	2 ships	4 trips a month
Kagoshima-Naha	2 ships (each over 1,200 tons)	2 trips a week

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.

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 Nisshin 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 Hakodate 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 af-

filiated with the Osaka Shosen Kaisha. The Kuribayashi Shosen Kaisha, Hokkaido, operates a regular service between Hakodate 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.

Ship Improvement Law In October, 1932, the Ship Improvement Law was enforced. The Ministry of Communications provided a plan for the construction of superior freighters to eliminate old ships which were increasing. For this purpose, the Ministry planned the construction of 200,000 tons of superior ships in exchange for the breaking-up of 400,000 tons of old ships aged more than 25 years. The Government is to give a subsidy over three years of ¥12,000,000 for the building of these 200,000 ton ships. Each ship to be built must be more than 4,000 gross tons and employed for ocean-going purposes. For the first year the Ministry has sanctioned subsidy grants for the building of 95,510 tons of new freighters, providing double that tonnage of old ships is scrapped.

During 1933 seven ships with 51,000 tons gross were built in ac-

cordance with the Ship Improvement Law. Those expected to be built during 1934 will be about 150,000 tons. At the beginning of 1934 there were 114,000 tons of ships under construction and of these 104,000 tons were those built in accordance with the Law. Ships built or to be built by various shipyards according to the Law follow: Yokohama Dockyard 3 vessels of 21,100 tons; Kawasaki Dockyard 3 vessels 26,730 tons; Harima Dock one vessel of 7,000 tons; Mitsubishi Shipbuilding and Engineering Works, Nagasaki, 14 vessels of 90,200 tons; Uraga Dock 4 vessels of 24,100 tons; Mitsubishi Shipbuilding and Engineering Works, Kobe, 3 vessels of 10,285 tons; and Mitsui Tama Shipbuilding Yard 5 vessels of 28,100 tons, with an aggregate of 201,215 tons.

The shipbuilding industry in Japan for 1933 showed only a slight improvement over the year before, which was in its worst plight of recent years. The tonnage was 79,820 as against 57,994 of 1932. Ships launched in Japan for the last 10 years follow:

Year	No. launched	Gross tonnage
1923	19	52,925
1924	20	63,790
1925	14	49,360
1926	15	47,530
1927	35	52,473
1928	53	109,664
1929	78	167,264
1930	49	84,004
1931	63	57,994
1932	67	79,820

The number of qualified mariners in Japan at the end of 1932 was 239,008, of whom 233,910 were Japanese and 5,098 foreigners. In addition, the number of marine technicians at the end of that year was 89,309, of whom 89,177 were Japanese and 132 foreigners. These technicians were mates and engineers.

The number of pilots in Japan at the end of 1932 was 56, all Japanese. Until the end of 1914, there were four foreign pilots in this country, but since then there has been none.

Open Ports The open ports in Japan are Yokohama, Kobe, Niigata, Ebisuko, Osaka, Nagasaki, Hakodate, Shimizu, Taketoyo, Nagoya, Yokkaichi, Uno, Onomichi, Itozaki, Tokuyama, Imaharu, Shimonoseki, Hagi, Moji, Wakamatsu, Hakata, Karatsu, Suminoye, 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. Their business for the last 8 years follows:

BUSINESS OF THE SEAMEN'S AID SOCIETY OF JAPAN

Year	Executive organs	Lower class seamen trained	Higher class seamen trained	Seamen lodged	Patients cured in hospitals		Seamen officially commended	Seamen rescued
					in-patients	out-patients		
1926	26	1,028	549	10,823	2,120	17,708	1,105	158
1927	27	970	432	13,601	1,898	23,150	869	122
1928	29	910	507	17,835	2,000	23,772	1,055	90
1929	29	896	547	18,464	1,653	22,174	864	98
1930	29	444	643	16,863	1,269	21,198	1,116	181
1931	29	318	528	11,532	1,403	22,158	1,001	136
1932	29	239	331	8,228	1,380	26,324	525	113

BUSINESS OF THE IMPERIAL SOCIETY OF LIFE-SAVING SERVICE

Year	Saving offices		Vessels, etc., rescued			
	No.	Officers	No. of vessels	Vessels (Value in yen)	Cargoes (Value in yen)	Persons
1926	105	12,240	893	4,820,776	1,647,102	1,753
1927	107	14,079	427	2,397,611	422,905	2,201
1928	120	15,288	519	3,108,113	398,108	2,640
1929	130	15,783	434	4,466,760	563,173	2,303
1930	146	17,621	673	2,866,854	383,763	2,856
1931	149	12,853	592	2,255,254	525,132	2,947
1932	154	13,255	723	2,091,011	371,267	2,924

BUSINESS OF THE MARINE COOPERATIVE ASSOCIATION FOR FINDING EMPLOYMENT FOR SEAMEN

Year	Employment offices	No. of applications		No. of men wanted		No. of applications filled	
		Higher class seamen	Lower class seamen	Higher class seamen	Lower class seamen	Higher class seamen	Lower class seamen
1927	13	4,945	33,991	1,539	23,202	1,408	22,225
1928	13	4,825	32,596	1,396	22,393	1,246	21,921
1929	17	3,908	31,879	1,496	23,033	1,388	22,410
1930	18	4,458	25,217	1,395	17,569	1,338	17,292
1931	18	5,108	24,087	1,622	13,227	1,596	17,927
1932	19	4,179	20,578	1,578	17,053	1,566	16,850

Status of Steamship Companies
Business status of Japan's five

largest steamship companies on March 31, 1932, as prepared by the Ministry of Communications, follows:

SEA TRANSPORTATION

Description	Nippon Yusen Kaisha, Ltd.	Osaka Shosen Kaisha, Ltd.	Niashin Kisen Kaisha, Ltd.	Nanyo Yusen Kaisha, Ltd.	Kita Nippon Kisen Kaisha, Ltd.
Capital (in ¥1,000)	106,250	100,000	16,200	5,000	2,700
Capital paid up (in ¥1,000)	64,250	62,500	10,125	4,562.5	2,305
No. of steamers	101	123	26	4	22
Gross tonnage	732,508	506,246	53,838	16,083	37,083
No. of sailings	609	5,856	444	24	1,013
Total distance sailed in miles	5,045,835	7,189,588	443,903	209,193	794,210
No. of passengers	162,000	1,700,212	4,203	1,102	51,720
Cargoes shipped in tons	3,684,000	7,146,001	302,041	177,048	726,868
Receipts from pas- sengers in yen	13,916,163	10,347,419	279,448	101,312	301,868
Receipts from freights in yen	38,887,312	42,554,413	1,800,021	1,006,537	3,062,043
Total receipts in yen	52,753,475	52,901,832	2,079,469	1,107,849	3,363,913

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. Chiehibu	17,000	207	80	—	500
M.S. Terukuni	12,000	125	69	60	—
M.S. Yasukuni	12,000	125	69	60	—
M.S. Helan	11,616	Cabin class	82	Tourist	260
M.S. Hikawa	11,622	"	82	"	260
M.S. Hiye	11,622	"	82	"	260
M.S. Heiyo	10,000	Tourist cabin	84	3rd class	50
S.S. Taiyo	14,458	308	221	—	425
S.S. Tenyo	13,402	195	84	—	538
S.S. Shinyo	13,027	141	82	—	538
S.S. Korea	11,810	151	41	—	432
S.S. Siberia	11,790	143	41	—	432
S.S. Fushimi	10,936	132	59	31	34
S.S. Suwa	10,672	116	55	32	54
S.S. Haruna	10,421	116	55	32	58
S.S. Hakone	10,421	116	55	32	58
S.S. Hakozaki	10,413	116	55	32	102
S.S. Hakusan	10,380	116	55	32	64
S.S. Kashima	9,908	122	52	37	64
S.S. Katori	9,849	42	51	—	60
S.S. Rakuyo	9,419	32	62	—	36
S.S. Anyo	9,257	37	53	—	44
S.S. Bokuyo	8,619	37	38	—	46
S.S. Ginyo	8,613	37	38	—	46

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	1928
M.S. Rio de Janeiro	9,626	5,000	1928
S.S. Buenos Aires	9,625	5,000	—
" Manila	9,486	5,600	1928

STEAMSHIP COMPANIES

Name of S.S.	Gross tonnage	Nominal horse power	Year constructed
S.S. Arabia	9,480	5,500	1917
" Africa	9,475	5,500	"
" Hawaii	9,469	4,800	1915
" Horai	9,205	7,400	1912
" Mizuho	8,511	6,400	"
" Fuso	8,188	6,100	1909
M.S. Takachiho	8,154	7,100	1933

Business Conditions of Large Shipping Companies

The Nippon Yusen Kaisha, which had not paid any dividend since the second half-yearly term of 1930, declared a 5 per cent. dividend for the second half term of 1933 for the first time for the last six terms. It closed its accounts at the end of October, 1933. Its total business income amounted to ¥37,960,000 against the total expenses of ¥31,890,000 and reserves of ¥5,260,000. The net profit was ¥797,000, showing a decrease from a profit of ¥1,129,000 for the preceding half-yearly term. This was due to less oversea freight income following revival of exchange rate. The balance carried forward to the next term, however, gained to ¥2,437,000 from one for the previous term amounting to ¥1,679,000.

The Osaka Shosen Kaisha experienced a good business from overseas freight income, since it maintained services for Africa, South America, Indian and South Seas. Active export trade made its income heavy. Its Dairen service also realized good results with increasing passengers and cargo. For the first time during the past seven terms the company declared a 5 per cent. dividend rate for the second half yearly term of 1933, ended December 31. Its total business income amounted to ¥36,753,000 against the total expenses of ¥28,240,000 and reserves of ¥6,899,000. The net profit was ¥1,614,000. Adding ¥1,171,000, the balance brought forward from the

previous term, to the profit, the company paid ¥2,785,000 as dividend to shareholders and carried forward to the next term ¥1,223,000.

Assets of the Nippon Yusen Kaisha now total about ¥213,000,000. Its subscribed capitalization totals ¥106,250,000, of which ¥42,000,000 is paid up. It has debentures, loans and bills to pay with a combined total of about ¥62,005,000. Its ship value at present totals ¥109,443,000. The Osaka Shosen Kaisha has assets amounting to ¥161,605,000. Its subscribed capitalization is ¥100,000,000, of which ¥37,500,000 is paid up. It has debentures totalling about ¥32,000,000. Its ship value is about ¥84,815,000. The Toyo Kisen Kaisha, since its sale of its trans-Pacific passenger ships to the Nippon Yusen Kaisha in 1926, has become insignificant internationally, but still it retains a position among the leading shipping concerns of Japan, as it has more than 10 freighters. It counts on the charterage of its cargo boats. It has not declared a dividend for the 21 terms since 1923. However, it realized a profit ranging from ¥13,000 to ¥308,000 during the last several years, with profit rates between 0.5 per cent. and 11.5 per cent. Its capitalization is ¥8,125,000, of which ¥5,688,000 is paid up. It has large debts of ¥30,943,000. Its ship value is ¥23,890,000. Its assets are about ¥40,000,000. The Kokusai Kisen Kaisha which used to have very poor business results, due to a prolonged shipping depression, is making a turn for the better since a few

years ago, thanks to the replacement of the gold embargo and the inflation policy of the Government. As far as the prevailing economic condition in Japan lasts, Japanese shipping companies are destined to see their

business status improved year after year.

Some Statistics

In the following are attached the more important statistics in connection with shipping.

NUMBER AND TONNAGE OF VESSELS

Year	Description	Steamers		Sailing vessels		Total			
		No.	Gross tonnage	Of tonnage capacity	Of koku capacity	No.	Gross tonnage		
Dec. 31, 1921	Registered	2,955	3,167,737	14,280	960,947	830	264,419	18,065	4,155,126
	Unregistered	3,158	39,720	21,405	331,069	8,945	679,827	33,508	458,722
" " 1922	"	3,001	3,254,962	13,997	930,058	755	239,923	17,753	4,309,012
	"	3,311	40,900	21,632	323,934	7,755	726,632	32,698	442,497
" " 1923	"	3,049	3,322,764	13,840	904,061	708	233,907	17,595	4,249,236
	"	3,120	38,604	24,885	365,477	7,096	776,014	35,101	481,772
" " 1924	"	3,143	3,520,748	13,891	891,135	653	205,342	17,687	4,432,417
	"	3,573	44,119	25,975	371,399	6,382	701,513	35,930	455,668
" " 1925	"	3,187	3,496,262	14,084	883,853	607	190,105	17,878	4,398,623
	"	4,136	50,679	26,595	386,207	5,001	545,383	35,732	491,424
" " 1926	"	3,246	3,607,038	14,184	873,468	564	177,073	17,994	4,498,213
	"	4,533	55,409	27,977	393,133	4,961	535,786	37,471	502,121
" " 1927	"	3,287	3,670,097	14,257	866,023	514	161,929	18,058	4,553,213
	"	4,804	58,603	28,986	406,172	4,863	512,927	38,653	516,068
" " 1928	"	3,321	3,753,763	14,729	878,007	484	150,732	18,533	4,553,213
	"	4,528	58,045	30,374	424,744	4,765	493,045	39,067	532,034
" " 1929	"	3,350	3,820,316	15,048	885,988	449	138,879	18,847	4,702,192
	"	4,991	59,574	31,464	341,689	4,429	457,133	40,884	446,976
" " 1930	"	3,351	3,907,908	15,379	896,231	367	117,041	19,097	4,815,842
	"	5,160	60,688	32,424	439,443	4,411	450,163	41,995	545,147
" " 1931	"	3,358	3,918,289	15,290	885,041	342	109,193	18,990	4,814,243
	"	4,719	55,878	33,687	449,536	3,701	390,454	42,107	544,459
" " 1932	"	3,308	3,874,619	15,038	867,958	308	97,060	18,654	4,752,233
	"	5,401	63,739	31,244	414,353	3,269	336,763	39,914	511,768

Note: The koku capacity is added to the total sum of gross tonnage on the basis of 10 koku = 1 ton.

Registered ships { hold certificate of nationality { Steamships above 20 tons
Sailing vessels { 1. above 20 tons
2. above 200 koku

Unregistered ships { hold ship license { Steamships under 20 tons
Sailing vessels { 1. under 20 tons above 5 tons
2. under 200 koku above 50 koku

INCREASE AND DECREASE OF REGISTERED VESSELS

Year	Description	Steamers		Sailing vessels		Total			
		No.	Gross tonnage	Of tonnage capacity	Of koku capacity	No.	Gross tonnage		
1921	Newly registered	153	256,852	455	30,321	—	608	287,173	
	Register cancelled	129	100,813	595	43,621	—	724	144,434	
	Increase or decrease	24	156,039	(-140)	(-13,300)	(-68)	(-22,454)	(-184)	142,739
1922	"	—	—	—	—	—	—	—	
	"	46	87,225	(-283)	(-30,889)	(-75)	(-24,496)	(-312)	53,854

Year	Description	Steamers		Sailing vessels		Total			
		No.	Gross tonnage	Of tonnage capacity	Of koku capacity	No.	Gross tonnage		
1923	Newly registered	160	135,849	(-498)	20,239	—	658	156,008	
	Register cancelled	112	66,199	655	46,328	49	16,016	816	114,129
	Increase or decrease	48	69,650	(-157)	(-26,089)	(-49)	(-16,016)	(-158)	41,959
1924	"	207	190,480	804	37,724	—	1,011	328,204	
	"	113	92,097	753	50,807	53	18,565	919	144,761
	"	94	198,383	51	(-13,083)	(-53)	(-18,565)	92	183,443
1925	"	160	80,116	696	31,003	—	856	111,119	
	"	116	104,321	503	39,154	46	15,237	665	144,999
	"	44	(-24,205)	193	(-8,151)	(-46)	(-15,237)	191	(-33,880)
1926	"	194	178,874	644	27,496	—	793	206,370	
	"	90	67,987	544	37,547	43	13,032	677	105,837
	"	59	110,887	100	(-10,051)	(-43)	(-13,032)	118	53,240
1927	"	149	139,809	574	26,031	—	723	165,840	
	"	105	78,080	501	33,006	50	15,144	659	112,600
	"	41	61,729	73	(-6,975)	(-50)	(-15,144)	64	53,240
1928	"	149	176,930	950	40,064	—	1,099	216,994	
	"	115	94,439	479	29,405	30	11,197	624	124,964
	"	54	82,491	471	10,659	(-30)	(-11,197)	475	92,030
1929	"	159	134,188	1,256	55,441	—	1,415	189,629	
	"	130	86,557	452	27,873	35	11,551	617	115,615
	"	29	47,631	804	27,568	(-35)	(-11,551)	798	74,014
1930	"	158	218,118	886	45,490	—	1,044	263,608	
	"	157	112,444	555	36,002	13	4,163	725	148,862
	"	1	105,674	331	9,488	(-13)	(-4,163)	319	114,746
1931	"	134	96,544	551	27,041	—	685	123,585	
	"	127	87,043	640	38,865	25	7,848	792	126,693
	"	7	9,510	(-89)	(-11,824)	(-25)	(-7,848)	(-107)	(-3,108)

IMPORTED VESSELS

Year	Japan Proper		Colonies		Total	
	No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
1914	14	32,266	4	16,548	18	48,814
1926	31	112,717	3	9,276	34	121,993
1927	29	68,962	6	10,813	35	79,775
1928	31	93,359	1	28	32	93,387
1929	10	22,143	1	736	11	22,879
1930	3	8,320	2	2,446	5	10,766
1931	5	2,166	1	81	6	2,247
1932	—	—	—	—	—	—

CLASSIFICATION OF IMPORTED VESSELS OVER 1,000 TONS ACCORDING TO CAPACITY

Capacity (tons)	1927		1928		1929		1930		1931		1932	
	No.	Gross ton.	No.	Gross ton.	No.	Gross ton.	No.	Gross ton.	No.	Gross ton.	No.	Gross ton.
1,000-2,000	4	7,235	2	3,359	2	3,678	—	—	—	—	—	—
2,000-3,000	11	23,858	6	13,909	1	2,469	—	—	—	—	—	—
3,000-4,000	4	12,409	4	12,354	2	6,176	—	—	—	—	—	—
4,000-5,000	—	—	2	9,702	2	9,121	—	—	—	—	—	—
5,000-6,000	2	10,751	5	26,627	—	—	—	—	—	—	—	—
6,000-7,000	—	—	—	—	—	—	—	—	—	—	—	—
7,000-8,000	2	15,218	1	7,385	—	—	—	—	—	—	—	—
8,000-9,000	—	—	—	—	—	—	1	7,804	—	—	—	—
9,000-10,000	—	—	2	18,614	—	—	—	—	—	—	—	—
over 10,000	—	—	—	—	—	—	—	—	—	—	—	—
Total	23	69,471	22	91,950	7	21,447	1	7,804	—	—	—	—

Note:—Vessels imported by Colonies are as follows:

SEA TRANSPORTATION

1926	{ 1,000-2,000 tons 3,000-4,000 .. 4,000-5,000 ..	{ 1, 1,728 tons 1, 3,334 .. 1, 4,168 ..	Total 3	9,276 tons
1927	{ 1,000-2,000 tons 2,000-3,000 .. 3,000-4,000 ..	{ 1, 1,218 tons 1, 2,105 .. 2, 7,393 ..	Total 4	10,816 tons
1930	2,000-3,000 tons	1, 2,417 ..	Total 1	2,417 tons
1931	—	—	1	81 ..
1932	—	—	—	— ..

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, Kobé-ku, Kobé	19	70,198
Toyo	Marunouchi, Kojimachi-ku, Tokyo	11	64,775
Kawasaki Dockyard Co., Ltd.	Kawasakimachi, Kobe-ku, Kobé	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
Nisshin 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, Kobé-ku, Kobé	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
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, Saghalien Island	7	33,916
Mitsubishi Trading Co., Ltd.	Marunouchi, Kojimachi-ku, Tokyo	5	33,026
Shimatani Kisen Kaisha, Ltd.	Maemachi, Kobe-ku, Kobe	8	32,038
Kuribayashi Trading Co. Ltd.	Kaigancho, Muroran	11	29,726
Shimomura Kisen Kaisha, Ltd.	Sozecho, Kita-ku, Osaka	4	23,053
Kokura Petroleum Co. Ltd.	Kofuncho, Nihonbashi-ku, Tokyo	3	21,931
Meiji Kaiun Kaisha, Ltd.	Akashicho, Kobé-ku, Kobé	6	21,874
Matsuoka 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

VESSELS WHICH ENTERED OPEN PORTS IN JAPAN

Year	Description	Yokohama		Kobé		Nagasaki	
		No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
1914	Japanese vessels	2,510	6,680,148	18,997	14,225,125	2,721	3,224,560
	Foreign vessels	560	3,632,271	791	4,957,469	445	2,547,750
1926	"	3,442	12,218,281	18,245	25,412,894	4,350	3,324,517
	"	963	7,955,118	1,160	9,485,648	107	913,645
1927	"	4,206	13,103,260	19,188	25,564,993	4,585	3,718,163
	"	945	7,682,566	1,158	9,357,725	114	919,592
1928	"	9,549	14,235,537	20,756	27,685,154	5,066	2,927,428
	"	1,018	8,192,246	1,216	9,854,657	141	1,108,023
1929	"	9,404	14,030,243	22,616	30,994,344	5,427	3,015,174
	"	1,038	8,331,510	1,276	10,211,775	140	1,151,491
1930	"	8,051	14,109,415	22,637	32,330,148	4,945	2,754,978
	"	980	8,249,875	1,254	10,249,221	122	1,017,729

VESSELS INTO JAPANESE PORTS

Year	Description	Yokohama		Kobé		Nagasaki	
		No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
1931	"	4,092	14,884,798	23,175	32,933,888	4,223	2,770,978
	"	919	7,988,357	1,133	9,889,786	71	781,447
1932	"	4,061	14,438,209	23,736	33,375,075	4,252	2,605,542
	"	833	7,769,176	1,068	9,658,145	73	742,697

Year	Description	Moji		Osaka		Total	
		No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
1914	Japanese vessels	5,121	11,016,469	—	—	24,349	35,096,382
	Foreign vessels	552	2,653,247	—	—	2,348	13,790,737
1926	"	6,872	15,968,391	11,918	16,498,464	44,822	73,422,547
	"	485	3,128,042	292	1,786,041	3,008	23,268,487
1927	"	7,441	16,895,028	5,067	12,758,787	40,487	72,540,233
	"	455	3,056,967	248	1,543,071	2,920	22,559,921
1928	"	7,293	17,455,329	5,460	14,244,170	48,124	76,547,611
	"	482	3,227,383	266	1,597,507	3,123	23,979,816
1929	"	7,525	18,181,511	5,409	14,612,159	50,381	80,833,431
	"	518	3,414,630	333	1,936,578	3,305	25,045,984
1930	"	7,480	18,136,392	6,028	15,209,309	49,141	82,540,242
	"	486	3,275,593	318	1,922,244	3,160	24,714,662
1931	"	7,319	17,708,156	6,469	16,816,268	45,278	84,614,088
	"	320	2,257,537	337	2,026,359	2,780	22,893,486
1932	"	7,624	18,658,107	6,827	17,479,347	46,500	86,556,280
	"	291	1,880,377	337	2,060,584	2,601	22,110,979

VESSELS WHICH ENTERED OPENED PORTS IN JAPAN IN 1932

Country	Description	Yokohama		Kobé	
		No.	Gross tonnage	No.	Gross tonnage
Japan	Steamer	2,393	5,523,405	20,906	18,895,608
	Sailing vessels	1,597	8,873,620	2,821	14,473,629
Great Britain	Steamers	66	33,963	6	728
	Sailing vessels	5	7,604	3	7,319
U.S.A.	Steamers	357	3,593,355	521	4,855,882
France	"	184	2,117,415	202	2,337,421
Holland	"	23	317,609	45	625,336
Germany	"	45	309,056	56	375,810
Finland	Steamers	54	425,567	68	517,125
Sweden	"	—	—	—	—
Norway	"	—	—	2	10,352
Denmark	"	14	98,696	15	95,491
Italy	"	100	586,641	89	485,444
Soviet Russia	"	33	206,269	38	226,647
China	"	11	65,603	12	70,554
Panama	"	5	9,852	5	13,864
Total	Steamers	4,823	22,166,201	24,795	43,027,382
	Sailing vessels	71	41,184	9	5,838

Country	Description	Nagasaki		Moji		Osaka	
		No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
Japan	Steamer	2,908	844,127	4,567	9,327,765	4,489	7,526,618
	Sailing vessels	340	1,686,048	2,158	9,277,410	2,255	9,925,786
Great Britain	Steamers	1,004	75,367	899	52,932	81	26,739
	Sailing vessels	—	—	—	—	—	—
U.S.A.	Steamers	44	539,781	170	1,250,646	179	1,173,718
France	"	4	41,226	1	5,686	50	317,235
Holland	"	—	—	—	—	—	—
Germany	"	—	—	37	236,571	39	242,967
Germany	Steamers	8	60,277	21	137,995	—	—
	Sailing vessels	1	27	—	—	—	—

SEA TRANSPORTATION

Country		Nagasaki		Moji		Osaka	
		No.	Gross tonnage	No.	Gross tonnage	No.	Gross tonnage
Finland	Steamers	—	—	1	4,567	1	4,568
Sweden	"	1	9,682	11	68,203	5	80,713
Norway	"	13	82,927	18	84,052	35	156,298
Denmark	"	—	—	7	46,426	7	40,058
Italy	"	—	—	2	13,186	2	12,607
Soviet Russia	"	—	—	8	15,290	13	75,046
China	"	1	1,921	15	17,806	6	7,374
Panama	"	1	6,856	—	—	—	—
	{ Steamers	3,320	3,272,845	7,016	20,485,553	7,031	10,512,988
Total	{ Sailing vessels	1,005	75,394	899	52,932	83	26,943

HOLDERS OF MARINER'S SERVICE BOOK

Year	Japanese	Foreigners	Total	Year	Japanese	Foreigners	Total
1914	231,679	2,239	233,968	1929	189,465	4,517	193,983
1926	(446,900 includes foreigners)		446,900	1930	212,917	4,823	217,740
1927	155,044	3,246	158,290	1931	222,346	5,020	227,366
1928	170,696	3,673	174,369	1932	233,910	5,098	239,008

HOLDERS OF CERTIFICATE OF COMPETENCY

Year		First grade			Second grade			Third grade	
		Master	First mate	Second mate	Master	First mate	Second mate	Master	Mate
1914	Japanese	1,223	770	1,332	747	1,604	3,399	95	12,167
	Foreigners	178	31	11	—	3	1	—	1
1926	"	2,893	1,658	2,477	1,700	2,684	6,195	145	19,796
	"	1	—	—	—	8	2	—	—
1927	"	3,022	1,712	2,689	1,746	2,772	6,701	147	20,810
	"	1	—	—	—	3	2	—	—
1928	"	3,126	1,804	2,861	1,794	2,842	7,092	151	21,971
	"	1	—	—	—	3	2	—	—
1929	"	3,254	1,871	3,003	1,849	2,915	7,422	150	22,880
	"	1	—	—	—	3	2	—	—
1930	"	3,403	1,909	2,991	1,865	2,948	8,480	163	24,405
	"	1	—	—	—	3	2	—	—
1931	"	3,493	2,000	3,075	1,882	2,989	9,919	163	27,439
	"	1	—	—	—	3	2	—	—
1932	"	3,546	2,024	3,229	1,869	2,997	10,570	163	28,076
	"	1	—	—	—	3	2	—	—

Year		Chief engineer	First class engineer	Second class engineer	Third class engineer	Total
1914	Japanese	1,114	2,030	1,608	3,995	30,083
	Foreigners	79	43	2	2	351
1926	"	2,241	3,788	3,091	13,485	60,154
	"	79	43	2	2	132
1927	"	2,327	3,974	3,183	14,879	63,961
	"	79	43	2	2	132
1928	"	2,440	4,164	3,244	16,429	67,918
	"	79	43	2	2	132
1929	"	2,566	4,306	3,344	18,060	71,630
	"	79	43	2	2	132
1930	"	2,593	4,260	3,388	20,382	76,787
	"	79	43	2	2	132
1931	"	2,697	4,227	3,558	24,376	85,821
	"	79	43	2	2	132
1932	"	2,783	4,157	3,812	25,951	89,177
	"	79	43	2	2	132

CERTIFICATE HOLDERS AND PILOTS

NUMBER OF HOLDERS OF PILOT'S LICENSE

Year		Pilotage districts					
		Tokyo Bay district	Sumida River district	Izumi Bay district	Inland Sea district	Inland Sea district & Nagasaki Harbour district	Tokyo Bay, Inland Sea & Nagasaki Harbour districts.
1914	Japanese	3	—	—	5	4	1
	Foreigners	—	—	—	2	1	1
1926	Japanese	5	3	5	18	1	—
1927	"	5	3	5	18	1	—
1928	"	5	4	5	22	—	—
1929	"	5	4	5	19	1	—
1930	"	5	4	5	19	1	—
1931	"	5	4	3	19	1	—
1932	"	5	4	3	20	1	—

Year		Pilotage districts					
		Nagasaki Harbour district	Shimono-seki district	Shimabara Bay district	Inland Sea and Shimabara Bay districts	Inland Sea, Nagasaki Bay and Shimabara Bay districts	Hakodate Harbour district
1914	Japanese	2	5	2	1	2	—
	Foreigners	—	—	—	—	—	—
1926	Japanese	1	6	2	—	2	—
1927	"	1	6	2	—	2	—
1928	"	1	6	2	—	—	2
1929	"	1	6	3	—	—	2
1930	"	1	6	3	—	1	2
1931	"	1	6	3	—	1	2
1932	"	1	6	3	—	—	1

Year		Pilotage districts					Total
		Muroran Harbour district	Yokkaichi Harbour district	Otaru Harbour district	Fushiki Harbour district	Nagoya Harbour district	
1914	Japanese	—	—	—	4	—	25
	Foreigners	—	—	—	—	—	4
1926	Japanese	—	—	—	—	—	43
1927	"	—	—	—	—	—	43
1928	"	1	—	1	3	—	52
1929	"	1	—	1	3	—	51
1930	"	1	—	1	3	—	52
1931	"	1	1	1	3	6	57
1932	"	1	1	1	3	6	56

Note: No foreign pilot since 1925.

PLACING OF TRAMP STEAMERS OVER 1,000 TONS

	1930		1931		1932	
	No.	Tonnage	No.	Tonnage (in 1,000 tons)	No.	Tonnage
Europe	53	389	52	380	80	582
U.S.A. East Coast	37	243	24	166	78	195
U.S.A. West Coast	69	521	70	505	50	378
South America East Coast	13	88	5	41	5	41
South America West Coast	5	42	5	42	5	41
Australia	33	188	48	273	29	161

SEA TRANSPORTATION

	1930		1931		1932	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
India	47	240	44	233	43	223
Near-by Sea	246	501	229	496	259	615
Others	525	1,722	543	2,033	425	1,609
Total	828	3,930	1,020	3,936	933	3,881

NUMBER OF SHIPS LAID-UP

Kind of ships	June, 1931		June, 1932		June, 1933	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
Steamer	271	195	273	232	208	147
Sailing vessels	265	15	291	15	245	12
Construction { Iron & steel	67	187	80	222	61	141
Wood	469	21	484	25	392	18
Total	536	209	568	247	453	159
Above 1,000 tons	56	181	43	212	24	135

TIME-CHARTER RATES IN JAPAN

Year		Large-sized vessels	Medium-sized vessels	Small-sized vessels
		per ton	per ton	per ton
1921	Highest	4.10	3.70	3.20
	Lowest	2.80	2.50	2.50
1922	"	3.00	2.65	4.10
			Kinkai (the Nearby Sea) District No. 1	No. 1 5.00
1923	"	2.50	3.00	No. 1 1.60
		1.65	1.65	No. 1 4.50
1924	"	2.80	3.00	No. 1 2.50
		1.10	1.30	No. 1 3.50
1925	"	2.00	2.30	No. 1 3.00
		1.10	1.30	No. 1 3.80
1926	"	2.00	2.60	No. 1 3.00
		1.40	2.00	No. 1 3.70
1927	"	2.50	2.80	No. 1 2.50
		1.20	1.40	No. 1 4.00
1928	"	2.50	2.80	No. 1 3.00
		1.20	1.40	No. 1 4.00
1929	"	2.50	3.00	No. 1 2.90
		1.30	1.50	No. 1 3.80
1930	"	1.70	2.50	No. 1 2.80
		.90	1.00	No. 1 3.00
1931	"	2.50	2.50	No. 1 2.00
		.70	1.00	No. 1 3.80
1932	"	2.35	2.80	No. 1 2.00
		.70	1.00	

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 (Daishin-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 (Daishin-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 "T'o", 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, unfaithfulness 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 penal code. The codification of Criminal 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 1928-1932 follows:

Year	Death Penalty	Penal Servitude		Imprisonment		Detention	Total
		for life	for a term	for life	for a term		
1928	21	43	23,030	—	195	5,601	28,859
1929	13	38	23,932	—	134	5,237	29,354
1930	15	43	27,007	—	350	5,765	33,190
1931	19	38	29,065	—	316	5,500	33,938
1932	22	57	31,339	—	378	4,491	36,227
Average	18	44	26,676	—	277	5,319	32,334

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 16 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 addicting 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, 1933)

Supreme Court	Courts of Appeal	Local Courts	Branch Courts	District Courts	Branch Offices
1	Tokyo	11	17	64	413
	Osaka	9	12	43	271
	Nagoya	6	9	30	203
	Hiroshima	6	13	36	232
	Nagasaki	8	17	53	284
	Miyagi	6	16	36	228
	Sapporo	5	3	20	96
Total	1	7	51	87	282
					1,733

II CLASSIFIED NUMBER OF CASES INVESTIGATED BY THE PUBLIC PROCURATORS (1932)

Name of Offence	Number of cases new	old	Persons examined	Prosecutions cases	persons
Criminal Code Offences					
Against the Imperial House	38	7	50	2	2
Against the execution of official duties	793	43	1,682	181	289
Escaping from prison, etc.	34	—	46	17	21
Giving shelter to a criminal or destroying evidence	93	—	176	27	37
Sedition	11	1	498	7	166
Fires through incendiarism or negligence	13,009	124	14,851	2,796	2,891
Inundating and interfering with irrigation	166	6	483	7	14
Interfering with traffic	813	19	1,043	123	144
House-breaking	4,453	67	6,025	1,236	1,364
Disclosing a secret of another person	48	—	51	4	4
Opium smoking	50	—	109	28	59
Polluting drinking water	44	—	63	11	12
Forgery of currency	85	1	225	41	127
Forgery of documents	4,696	292	7,898	538	703
Forgery of negotiable securities	651	60	1,123	146	239
Forgery of seals or stamps	1,303	13	1,430	15	29
Perjury	1,492	242	2,724	73	129
False accusation	1,005	72	1,551	20	21
Obscenity, illicit sexual intercourse and bigamy	3,121	57	4,628	1,045	1,449
Gambling and lotteries	16,380	78	71,505	10,290	41,197
Disturbing worship, etc.	261	7	390	27	33
Malversation	619	45	2,202	130	503
Murder	2,474	23	3,010	1,123	1,333
Inflicting injury	26,935	283	38,484	7,153	3,579
Inflicting injury by negligence	18,242	281	19,431	5,023	5,136
Criminal abortion	354	10	1,049	72	130
Desertion of children, etc.	285	3	378	15	17
Arresting or confining others unlawfully	107	10	229	15	22
Intimidation	1,537	57	2,620	273	315

Name of Offence	Number of cases		Persons examined	Prosecutions	
	new	old		cases	persons
Kidnapping and abduction	1,469	40	2,319	125	150
Defamation	2,210	97	3,386	144	192
Unlawful interference with another man's credit and business	884	69	1,939	54	102
Theft and burglary	112,038	339	125,883	18,480	20,085
Fraud and blackmail	84,836	2,162	115,100	5,413	6,826
Usurpation	45,126	877	51,809	1,957	2,125
Receiving stolen property	3,754	61	4,814	447	575
Destruction and concealment of another man's property	2,304	100	3,513	86	114
Total	352,640	5,546	492,898	57,144	95,225
Offences against Special Laws	98,096	1,003	137,276	38,024	51,620

Criminal Code Offences	Non-prosecutions		Miscellaneous		Total		Not yet decided	
	cases	persons	cases	persons	cases	persons	cases	persons
Against the Imperial House	35	36	3	3	40	41	5	9
Against the execution of official duties	537	1,195	82	206	800	1,600	36	82
Escaping from prison, etc.	10	13	7	12	34	46	—	—
Giving shelter to a criminal or destroying evidence	51	107	15	24	93	168	—	8
Sedition	1	153	2	78	10	397	2	101
Fires through incendiarism or negligence	10,607	11,280	513	552	13,916	14,723	117	128
Inundating and interfering with irrigation	160	461	2	4	169	479	3	4
Interfering with traffic	414	576	280	306	817	1,025	15	17
House-breaking	2,868	4,055	357	459	4,461	5,878	59	147
Disclosing a secret of another person	39	42	5	5	48	51	—	—
Opium smoking	9	25	10	22	47	106	3	3
Polluting drinking water	29	46	4	5	44	63	—	—
Forgery of currency	25	55	20	43	86	225	—	—
Forgery of documents	3,305	5,188	806	1,231	4,549	7,122	339	776
Forgery of negotiable securities	363	509	146	248	655	996	56	127
Forgery of seals or stamps	1,229	1,313	50	584	1,294	1,400	22	30
Perjury	1,250	1,919	235	399	1,558	2,438	176	286
False accusation	932	1,336	75	101	1,927	1,458	59	93
Obscenity, illicit sexual intercourse and bigamy	1,643	2,418	397	604	3,085	4,471	93	157
Gambling and lotteries	5,346	24,405	725	5,293	16,361	70,895	97	610
Disturbing worship, etc.	167	253	69	89	263	375	5	15
Malversation	406	1,224	74	279	610	2,096	54	196
Murder	1,014	1,226	317	395	2,454	2,954	43	56
Inflicting injury	17,458	25,727	2,357	3,489	26,968	37,895	250	589
Inflicting injury by negligence	10,997	11,625	2,186	2,322	18,206	19,983	317	348
Criminal abortion	241	733	33	102	246	965	18	84
Desertion of children, etc.	197	267	72	88	284	372	4	6
Arresting or confining others unlawfully	82	162	11	25	108	209	9	20
Intimidation	1,120	1,874	189	309	1,582	2,498	32	122
Kidnapping and abduction	844	1,344	484	710	1,453	2,294	56	115
Defamation	1,930	2,895	146	208	2,229	3,205	87	181
Unlawful interference with another man's credit and business	727	1,472	91	193	872	1,757	81	173
Theft and burglary	70,745	89,056	13,782	16,159	112,007	125,300	370	583
Fraud and blackmail	58,855	76,184	20,569	27,824	84,837	110,834	2,161	4,266

	Non-prosecu- tions		Miscellane- ous		Total		Not yet decided	
	cases	persons	cases	persons	cases	persons	cases	persons
Usurpation	34,941	30,177	8,204	9,128	45,102	50,430	901	1,460
Receiving stolen property	2,968	3,678	288	377	8,703	4,630	112	184
Destruction and concealment of another man's property	2,030	3,029	185	276	2,301	3,419	103	194
Total	242,575	314,878	52,791	71,616	352,510	481,719	5,676	11,170
Offences against Special Laws	37,316	54,663	22,631	29,744	97,971	135,027	1,128	2,340

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	
1928	Boys	12,493	7,841	4,200	9	12,070
	Girls	1,005	564	405	—	969
1929	Boys	12,346	7,752	4,227	—	12,006
	Girls	1,019	573	409	1	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	13,029
	Girls	1,154	670	441	—	1,112

IV NUMBER OF JUVENILES DEALT WITH IN THE HOUSES OF CORRECTION

Year	Number of persons who went out of the House of Correction								Total
	Persons received	Released	Provi- sional release	Cancel of decision or its revision	Abscon- dence	Death	Sent to other house	Misc.	
1928	1,004	72	80	405	98	2	—	21	673
1929	1,224	43	76	665	66	3	—	9	863
1930	1,252	65	82	745	83	1	—	3	966
1931	1,259	71	65	774	52	1	—	7	927
1932	1,172	71	63	730	54	—	2	7	927

V NUMBER OF PRISONS (Oct. 1, 1933)

Prisons	Branches	Total
52	103	155

VI YEARLY COMPARISON OF THE NUMBER OF NEW CASES

/ Year	1928	1929	1930	1931	1932	Average of five years
Criminal Code Offences						
Theft	12,069	12,970	14,807	15,498	17,771	14,623
Gambling and lotteries	1,527	1,514	1,444	1,379	1,144	1,402
Fraud and usurpation	4,269	4,503	5,175	5,441	5,990	5,075
Forgery of documents, negotiable securities and seals or stamps	451	417	495	484	500	460
Injury	1,346	1,342	1,460	1,402	1,561	1,422
Receiving stolen articles	288	245	303	350	340	305
Murder	625	413	490	558	666	530
Burglary	612	641	673	651	800	677
Incendiarism	416	416	444	613	772	532
Interference with the execution of official duties	65	82	55	97	83	75
Destruction and concealment of another man's property	22	16	14	11	9	14

/ Year	1928	1929	1930	1931	1932	Average of five years
Forgery of currency	27	37	26	31	50	34
Abortion	43	24	26	39	32	33
Obscenities, illicit sexual intercourse and bigamy	178	183	221	204	243	206
House-breaking	212	261	298	248	282	260
Perjury	41	35	37	38	38	38
False accusation	15	12	10	15	15	13
Others	414	366	438	437	442	410
Offences against Special Laws						
Criminal law of the army and navy	46	42	41	28	46	41
The forest law	55	44	40	37	40	43
The military service law	6	9	18	8	9	10
The mail and telegraphy law	5	1	7	7	5	5
Others	567	559	924	858	971	776
Police laws, and prefectural laws	5,591	5,222	5,744	5,504	4,478	5,308
Total	28,899	29,354	33,190	33,938	36,287	32,334

VII YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS ACCORDING TO THE TERM OF SERVITUDE

/ Year	1928	1929	1930	1931	1932	Average of five years
Penal Servitude						
Penal servitude for life	43	38	43	38	57	44
Over 15 years	44	5	20	52	38	32
Less than 15 years	60	55	57	58	68	60
Under 10 years	851	692	765	760	890	792
Under 5 years	1,587	1,693	1,764	1,723	2,046	1,763
" 3 "	2,361	2,028	2,719	2,766	3,210	2,737
" 2 "	4,855	5,244	5,560	5,745	6,840	5,649
" 1 year	7,627	8,288	9,894	10,668	12,049	9,705
" 6 months	3,864	3,686	4,390	4,464	4,638	4,208
" 3 "	1,790	1,641	1,838	1,829	1,560	1,732
Total	23,082	23,970	27,050	28,103	31,396	26,720
Imprisonment						
For life	—	—	—	—	—	—
Over 15 years	—	—	—	—	—	—
Less than 15 years	—	—	—	—	—	—
Under 10 years	—	—	—	—	—	—
Under 5 years	—	—	—	—	—	—
" 3 "	—	1	—	—	—	—
" 2 "	—	4	5	7	2	4
" 1 year	3	2	11	6	3	5
" 6 months	13	17	28	54	69	36
" 3 "	179	110	316	249	304	232
Total	195	134	360	316	378	277
Detention	5,601	5,237	5,765	5,500	4,491	5,319
Death penalty	21	13	15	19	22	18
Total	28,899	29,354	33,190	33,938	36,287	32,334

VIII YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS ACCORDING TO THE NATURE OF CRIMES

	1928		1929		1930	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Theft	5,257	6,802	5,358	7,612	6,585	8,222
Burglary	374	238	389	243	455	215
Gambling and lotteries	974	553	963	551	931	513
Fraud and terrorism	1,743	1,402	1,750	1,585	2,133	1,734
Usurpation	798	326	804	364	933	375
Receiving stolen goods	203	85	135	92	216	87
Forgery of currency	20	7	25	12	19	7

	1928		1929		1930	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Forgery of documents, seals or stamps	354	97	330	87	391	104
Obscenities, illicit sexual intercourse and bigamy	153	25	149	34	189	32
Injury	1,035	311	1,034	307	1,117	341
Murder	562	51	375	34	423	53
Abortion	34	9	20	4	23	3
Sedition	69	1	25	7	18	—
Incendiarism	385	31	380	36	423	21
Others	480	219	501	239	569	265
Offences against special laws	575	94	540	101	894	117
Total	13,026	10,251	12,796	11,308	15,319	12,091

	1931		1932		Average of five years	
	First offenders	Recidivists	First offenders	Recidivists	First offenders	Recidivists
Theft	6,771	8,727	7,950	9,821	6,386	8,237
Burglary	436	207	541	248	439	230
Gambling and lotteries	856	523	721	423	889	518
Fraud and terrorism	2,264	1,861	2,669	1,992	2,112	1,715
Usurpation	974	342	1,001	328	902	347
Receiving stolen goods	225	125	229	111	205	109
Forgery of currency	21	10	39	11	25	9
Forgery of documents, seals or stamps	389	95	393	107	371	96
Obscenities, illicit sexual intercourse and bigamy	167	37	196	47	171	33
Injury	1,100	302	1,231	329	1,103	318
Murder	498	49	604	52	492	48
Abortion	34	5	25	7	27	6
Sedition	19	1	39	2	34	2
Incendiarism	567	46	727	45	496	36
Others	578	248	569	258	539	245
Offences against special laws	826	116	917	142	750	114
Total	15,725	12,694	17,851	13,923	14,943	12,053

IX THE NUMBER OF CONVICTS AT THE END OF EACH YEAR

Classes	1928	1929	1930	1931	1932	Average of five years
Convicts	{ men 35,779 women 632	{ 36,859 634	{ 40,595 593	{ 41,671 582	{ 45,730 594	{ 40,127 607
Accused	{ men 2,860 women 81	{ 3,916 103	{ 4,628 133	{ 4,611 131	{ 5,536 165	{ 4,310 123
Detained in the house of labour	{ men 259 women 6	{ 317 5	{ 472 9	{ 492 13	{ 461 16	{ 469 10
Infants	{ boys 2 girls 5	{ 5 3	{ 5 4	{ 4 3	{ 2 4	{ 4 4
Total	{ men 38,900 women 724	{ 41,097 745	{ 45,700 739	{ 46,778 729	{ 51,729 779	{ 44,841 743
Sum total	39,624	41,842	46,439	47,507	52,508	45,564

X YEARLY COMPARISON OF THE NUMBER OF NEW CONVICTS

Classes	1928	1929	1930	1931	1932	Average of five years
Convicts	28,899	29,344	33,190	33,938	36,287	32,334
Suspects	18,132	16,644	16,864	16,635	17,498	17,153
Accused	27,085	27,995	34,413	33,737	36,533	31,952
Kept in the house of labour	5,261	5,456	7,909	9,658	11,272	7,911
Infants (a) born in prison	2	3	2	6	4	1
(b) taken in with mother	31	27	29	26	19	26
Total	33	30	31	32	23	30
Sum total	79,410	79,469	92,407	94,000	101,613	86,382

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, Oki, 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, 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 the number of the inmates at the end of 1933, was as follows:

Convicted persons	{ Males	45,780
	{ Females	594
Suspected persons	{ Males	74
	{ Females	0
Accused persons	{ Males	5,462
	{ Females	165
Persons detained in workhouses	{ Males	461
	{ Females	16
Infants	{ Males	2
	{ Females	4
Total		52,508

The kinds and regular number of prison officials are as follows:

Governor (officials of <i>sonin</i> rank)	43
Assistant-governors (officials of <i>sonin</i> rank)	84
Doctors (accorded treatment as officials of <i>sonin</i> rank)	95
Chaplains (accorded treatment as officials of <i>sonin</i> and <i>hannin</i> ranks)	137
Instructors (accorded treatment as officials of <i>hannin</i> rank)	37
Industrial work experts (accorded treatment as officials of <i>sonin</i> rank)	19
Assistant industrial work experts (accorded treatment as officials of <i>hannin</i> rank)	405
Assistant doctors (accorded treatment as officials of <i>hannin</i> rank)	37
Pharmacists (accorded treatment as officials of <i>hannin</i> rank)	10
Chief warders (officials of <i>hannin</i> rank) (including 5 chief wardresses)	479
Interpreters (officials of <i>hannin</i> rank)	4
Warders (accorded treatment as officials of <i>hannin</i> rank) (including 171 wardresses)	6,509
Workers, miscellaneous	627
Total	8,434

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 strict-

ly 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 purpose 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 interview 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 prisoners 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 manufacturing 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 and allow them to take exercise within these hours. A time of recess—

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 forbidden. 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 "kazan-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 Hachiroemon Mitani, head of the House of Mitsui, donated ¥750,000 to the work, and with this money the Hōsei-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 re-

leased; 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 necessities 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 function of the police that goes side by side with the first one, but the principal significance of the esta-

lishment 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. 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 in 1932 was as shown below:

(Items less than 10,000 are omitted)	
Pawn shops	13,623
Dealers in second-hand articles	261,960
Hotels	50,196
Boarding houses	10,290
Dosa-houses	14,451
Restaurants	61,261
Cafes and bars	80,398
Bath-houses	21,743
Eating houses	150,303
Employment exchanges	12,408
Printing houses	13,615
Barber's shops	74,051
Woman hair-dressers	57,754
Longshoremen	80,697
Game houses	21,623
Building contractors	28,969

(Items less than 10,000 are omitted)

Shipping agents	11,448
Waggon-business men	143,728
Taxi-drivers	20,776
Scribes	12,079
Bicycle dealers	26,664
Rikishamen	25,133
Cinema theatres	75,813
"Yosé" (Story-telling houses)	18,828
Licensed prostitution houses	10,500

(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. Re-

gulations 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

	1928-1932				
	1928	1929	1930	1931	1932
Number of fire	11,930	11,983	14,610	16,286	18,334
Number of houses damaged	24,122	25,174	22,280	22,334	25,690
Amount of damages estimated (In 1,000 yen)	64,467	67,343	55,637	54,976	61,730
Average amount of damages per one house (Estimated)	¥ 2,678	2,675	2,497	2,461	2,402

NUMBER OF PERSONS SUFFERED FROM THESE FIRES

	1928-1932														
	1928			1929			1930			1931			1932		
	Dead	Firemen Injured	Total	Dead	Firemen Injured	Total	Dead	Firemen Injured	Total	Dead	Firemen Injured	Total	Dead	Firemen Injured	Total
1928	25	1,621	1,646	446	1,562	2,008	471	3,183	3,654	471	3,183	3,654	471	3,183	3,654
1929	16	1,618	1,634	457	1,180	1,596	473	2,757	3,230	473	2,757	3,230	473	2,757	3,230
1930	20	2,204	2,224	415	911	1,326	455	3,115	3,550	455	3,115	3,550	455	3,115	3,550
1931	17	1,806	1,823	473	922	1,395	490	2,728	3,218	490	2,728	3,218	490	2,728	3,218
1932	28	1,981	2,009	451	1,169	1,620	479	3,150	3,629	479	3,150	3,629	479	3,150	3,629

(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 coniving 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, waggon-

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:

Walkers	1928	1929	1930	1931	1932
No. of cases	23,903	25,517	27,609	26,776	26,933
Killed	1,547	1,645	1,733	1,676	1,743
Injured	20,805	22,746	25,488	24,568	25,173
Automobiles					
No. of cases	8,456	13,051	13,473	14,938	16,832
Killed	211	219	216	270	280
Injured	3,190	5,309	5,542	5,955	6,792
Bicycles					
No. of cases	11,634	9,123	11,420	15,544	16,447
Killed	112	160	149	187	286
Injured	6,635	5,743	7,815	10,201	11,459
Others					
No. of cases	11,540	10,376	10,819	11,565	11,009
Killed	451	424	438	439	492
Injured	6,224	5,241	5,831	6,614	5,835
Total					
No. of cases	55,533	58,077	63,411	68,823	71,221
Killed	2,321	2,448	2,536	2,572	2,801
Injured	31,854	39,633	43,621	46,338	49,259

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, negoti-

able security businesses, trust businesses, insurance businesses, commercial exchanges, the central wholesale 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 labour-

ers 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 1932 there were 1,209 police stations, 23 water-police stations, 4,421 branch stations, 14,292 police-boxes.

At the same time there were 52 chiefs of police divisions, 317 police-superintendents, 1,544 police inspectors, 3,524 assistant police inspectors, 57,763 police sergeants and policemen, total being 63,200.

EXPENDITURES FOR POLICE BUSINESS

	1929	1930	1931	1932	1933 (Budget)
Salaries	¥ 65,653,260	66,598,127	67,153,356	66,808,280	69,831,546
Expenditures for police stations	10,364,260	9,788,341	9,206,728	8,634,579	9,005,192
Secret service funds	824,400	688,890	738,636	683,896	678,215
Total	76,841,920	77,075,358	77,098,720	76,216,768	79,515,953
Repairs of police stations					
Ordinary	861,911	810,734	670,817	677,007	634,671
Extraordinary	4,754,554	1,002,760	1,419,048	1,308,673	1,338,668
Grand Total	82,458,385	78,888,852	79,188,585	78,202,443	81,798,399
Average expenditures per one family	6.85	6.58	6.24	6.16	6.45
Average expenditures per one person	1.38	1.32	1.23	1.21	1.27

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 encyclopaedic 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 herba 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 Bureau 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 officials 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.

quite outrange in number those 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, 1927-1932, is shown below:

Year	Schools	Students
1927	45,766	13,073,854
1931	45,898	12,547,200
1932	45,903	12,549,220

Year	Schools	Students
1929	45,610	12,267,690
1930	45,479	12,044,220
1931	45,239	11,733,688

Classified according to types, the number of schools in Japan proper in the year 1932, with the number of students enrolled, was as follows:

	Schools	Students
Elementary Schools	25,665	10,381,290
Middle Schools	558	336,186
Girls' High Schools	980	362,625
Business Schools	1,008	292,015
Business Continuation Schools	15,083	1,271,971
Higher Schools	32	20,844
Universities	46	69,985
Colleges	111	67,913
Higher Trade and Industrial Colleges	52	21,953
Normal Schools	104	39,803
Higher Normal Schools	2	1,844
Higher Normal Schools for Women	2	850
Special Institutes for the Training of Teachers	9	419
Institutes for the Training of Business School Teachers	4	374
Institutes for the Training of Business Continuation School Teachers	44	1,123
Schools for the Blind	77	4,550
Schools for the Deaf and Dumb	59	4,144
Miscellaneous Schools	1,935	196,903
Total	45,766	13,073,854

The figures for schools refer to those existing on March 31, while the figures for students refer to those on March 1.

Elementary Education

Elementary education in Japan is compulsory and has attained to its present high level of excellence through many improvements since the promulgation of the School Ordinance in 1872. In the Imperial Ordinance relating to Elementary Schools the object of elementary education is defined as follows:

"Elementary schools are design-

ed to give children the rudiments of moral education specially adapted to make of them good members of the community, together with such general knowledge and skill as are necessary for the practical duties of life, due attention being paid to their bodily development."

According to the system of compulsory education all children from 6 to 14 years of age are called school-age children, and those who exercise parental authority over them, or their legal guardians, must send them either to the ordinary elementary schools established by the cities, towns or villages until they complete the required course of study, or to schools established by the Government, prefectures or by private individuals, recognized as equal to the ordinary ones above mentioned. The law is not enforced when a child is unfit for study owing to physical or mental deficiency or cannot be sent to school by reason of extreme poverty. There is a provision which requires the employers of school-age children to see that the work imposed does not interfere with their going to school.

The responsibility of establishing ordinary elementary schools is placed upon cities, towns and villages, and they are making efforts to maintain schools even in the dire depression of the past few years. At the same time, however, special provisions permit the State Treasury to bear part of the expense, and the diffusion of elementary school education in Japan proper is all but ideal, the number of the school-age children attending schools maintaining the rate of 99% for the past five years.

The full figures are as follows:

These figures represent the condition existing on March 31 of the respective years.

Year	School-age Children	Children Attending Schools	Children not Attending Schools	Percentage of Children Attending Schools
1932	10,392,794	10,344,642	48,152	99.54
1931	10,105,941	10,056,530	49,411	99.51
1930	9,883,785	9,832,847	50,938	99.48
1929	9,717,057	9,663,586	53,471	99.45
1928	9,565,932	9,514,737	51,225	99.46
1927	9,401,906	9,348,863	53,041	99.44

Elementary schools are divided into two grades, namely, ordinary or lower and higher. The former are for the beginners and their course extends over six years. The latter are for those who have completed the lower course, and their courses are of two or three years' duration. The subjects taught are morals, Japanese language, arithmetic, Japanese history, geography, science, drawing, singing, sewing (for girls only) and gymnastics. In the higher courses, either one or more subjects out of handicraft, agriculture, industry, commerce and domestic science (for girls only), are added, and if local circumstances make it advisable, handicraft in ordinary elementary schools and foreign languages and other useful subjects in higher elementary schools may also be taught.

An elementary school may comprise both the ordinary and the high-

er elementary school courses and may equip itself with a supplementary course of not more than two years.

Under the present system of compulsory education the father's responsibility ends when his child has graduated from the lower elementary school. But the ordinary elementary education of children is not sufficient for the existing conditions of society, and many cities, towns and villages establish higher elementary schools either independently or in connection with ordinary ones. For the same reason, many business continuation schools are established to give elementary school graduates such education as may be of use in various trades.

The following table will give a general idea of the conditions of elementary schools as they were in 1932.

	Governmental	Public	Private	Total
Schools	—	7,023	67	7,090
Ordinary Schools	4	18,389	21	18,414
Ordinary and Higher Schools	—	160	1	161
Higher Schools	4	25,572	89	25,665
Total				
Classes	54	178,659	581	179,294
Ordinary and supplementary	8	31,695	33	31,776
Higher and supplementary	62	210,354	614	211,030
Total	93	232,976	793	233,769
Teachers	2,391	10,352,785	26,114	10,380,290
Pupils	449	1,937,156	4,080	1,941,685
Graduates	507	2,335,278	5,354	2,341,139
Entrants				
Daily Attendance	2,074	8,695,241	23,958	8,722,273
Ordinary	219	1,279,062	1,166	1,281,447
Higher	2,293	9,974,303	25,124	10,002,724
Total				
Percentage of Daily Attendance	95.53	96.78	95.55	96.3
Ordinary	96.90	96.44	97.98	96.4
Higher	95.66	96.74	95.66	96.3
Average				

Teachers and Salaries There are more male teachers than female in the Japanese elementary schools, and they are classified according to their education and special abilities, as (1) elementary school teachers (2) lower elementary school teach-

ers, (3) teachers on special subjects, (4) assistant teachers, and (5) substitute teachers. The teachers belonging to the first two classes are regular teachers properly qualified for the elementary education of children.

ELEMENTARY SCHOOL TEACHERS CLASSIFIED

(1931-1932)

	Male	Female	Total
Ordinary Elementary Schools			
Regular teachers	110,024	53,243	163,267
Special teachers	3,484	6,433	9,917
Assistant teachers	4,255	2,494	6,749
Substitute teachers	7,156	7,713	14,869
Total	124,919	69,883	194,802
Higher Elementary Schools			
Regular teachers	32,476	2,384	34,860
Special teachers	1,783	1,316	3,099
Assistant teachers	81	6	87
Substitute teachers	745	269	1,014
Total	35,085	3,975	39,060
Grand total	160,004	73,858	233,862

TEACHER'S MONTHLY SALARY

(1931-1932)

	(1)	(2)	(3)	(4)	(5)
Ordinary Elementary School					
Maximum, Male	¥216	136	140	65	130
" Female	120	90	110	60	80
Minimum, Male	10	20	1	15	1
" Female	10	8	1	6	1
Average					
Male	69	51	52	39	39
Female	49	42	41	35	26
Average	62	48	45	37	32
Higher Elementary School					
Maximum, Male	¥215	(3)	(4)	(5)	
" Female	110	148	73	102	
Minimum, Male	12	102	50	110	
" Female	33	1	30	1	
Average					
Male	71	54	42	42	
Female	54	44	40	33	
Average	70	50	42	41	

Secondary Education

For the secondary grades there are middle schools for boys, girls' high schools, business schools and business continuation schools.

Middle Schools The course of the middle school extends over five

years, and its object is to give boys such a higher general education as will fit them to be useful members of society after their graduation. The subjects taught are morals, civics, the Japanese language and Chinese classics, history, both Japanese and foreign, geography, a for-

foreign language (either one of English, German, French or Chinese), mathematics, science, technical studies, drawing, music, practical work (carpentering, gardening, etc.) and gymnastics.

From the fourth year upwards, the subjects are selected and arranged into two groups, the pupils making choice between the two. Under special circumstances, however, the Minister of Education may authorize a school in which either of the two groups may be dispensed with. This dual system of curriculum is of benefit on the one hand to the pupils who wish to take up employment immediately upon graduation, and on the other to those who wish to advance to higher-grade schools.

To the regular course a supplementary course of one year or less may be added, and, if local circumstances require, a preparatory course of two years may also be provided. A boy who desires to enter a middle school must complete either its preparatory course or the full course of an ordinary elementary school.

Those who are twelve or more years of age and in possession of adequate scholastic attainments may be admitted upon examination. Those who have completed the fifth year (the course of the ordinary elementary school ends with the sixth year as mentioned above) of an ordinary elementary school and are physically well developed and have shown excellent scholarship are allowed to apply for the entrance examination, even though under twelve years of age; this is to give a chance to specially gifted boys.

The following are the figures for middle schools and their pupils in the years 1927-1932:

Year	Schools	Pupils
1932	558	533,705
1931	557	545,601
1930	555	545,596
1929	546	541,700
1928	532	531,651
1927	518	516,730

A general idea of the condition of the middle schools in March, 1932 may be obtained by the following table of figures:

	Governmental	Public	Private	Total
Schools	2	435	121	558
Classes, regular course	25	6,523	1,356	7,904
Number of boys in one class	39.88	42.51	42.59	42.51
Teachers, licensed	59	9,750	2,111	11,920
" non-licensed	—	Female 3	Female 4	Female 7
"	—	1,228	630	1,858
Total	59	Female 13	Female 4	Female 17
Pupils, regular course	997	10,994	2,749	14,740
Pupils Supplementary course	—	Preparatory	37	37
Total	997	92	24	1,013
Graduates, regular course	167	277,382	57,807	335,196
" Supplementary course	—	47,042	11,576	58,618
Total	167	295	57	329
Applicants, regular course	1,086	47,337	11,653	59,976
" Supplementary course	—	Preparatory	24	24
Total	1,086	1,839	80	2,005
Admitted, regular course	211	82,872	20,658	104,341
" Supplementary course	—	59,561	10,874	70,435
Total	211	Preparatory	17	228

	Governmental	Public	Private	Total
Admitted, Supplementary Course	—	1,004	80	1,174
Total	211	60,655	10,971	71,837
Left school, regular course	40	23,785	8,298	32,123

Girls' High Schools The system of high schools for girls is made flexible to suit practical requirements. A girl who has completed elementary school or has equivalent scholastic attainments and is twelve years or more of age may be admitted to a girls' high school. The course of the girls' high school extends over four or five years, and those schools whose entrance requirement is the completion of the higher elementary school or the possession of the same or higher scholastic attainments are allowed to shorten their course to three years. There is another kind of girls' high school which is called Girls' Domestic High School, where domestic science is the main course of study, and its regular course extends over two to four years. Girls who wish to take only one part of the course are allowed to do so on application. A supplementary course of two years or less may be provided for the benefit of those who wish to continue their study after completing the regular course, and a post-graduate course or a higher course of two or three years for the purpose of giving higher education. In the cases of the higher course, higher qualifications are required of the teachers and its standard is brought up almost to that of the higher school for boys.

The subjects taught in a girls' high school are the same as those taught in the middle schools, but with the addition of domestic science and sewing, the required hours of study being from 28 to 29 a week. In the case of the Girls' Domestic High School, technical study is added and the hours for domestic sci-

ence and sewing are double those of the ordinary high school, the time allowed for other subjects being shortened, and foreign languages omitted altogether. Under special circumstances the foreign language, drawing and music may be omitted, and if local circumstances require, pedagogics, manual arts, technical studies and other useful subjects may be taught in addition to the normal curriculum. In such cases the total weekly hours may be increased to a little over 30. The curriculum of a domestic course of three years, the entrance requirement of which is the completion of the first year of the higher elementary school, is to be suitably drawn up on the basis of that of a domestic course of two years, the entrance requirement of which is the completion of the higher elementary school, and be submitted to the Minister of Education for approval.

The progress of female education is phenomenal in modern Japan and girls' high schools have taken very marked strides in recent years both in number and quality. At the end of March, 1932, there were 980 girls' high schools in Japan proper, many of them being provided with, or contemplating the provision of, a post-graduate course or a higher course.

The number of schools and girl students in the years 1927-1932 was as follows:

Year	Schools	Girls
1932	980	362,625
1931	975	368,909
1930	970	367,726
1929	940	359,269
1928	860	343,578
1927	862	326,208