

procedure regarding the customs administration, the Manchoukuo Government, faithful to its pledge of respecting external obligations contracted under the former regime, gave its early attention to the matter of liquidating foreign claims on debts incurred for munitions and equipment for the Mukden arsenals and other establishments. The creditors including Americans, British, Czechoslovakians, Danes, French, Germans, Japanese, Dutch, Norwegians, Swedes, etc., presented to the Manchoukuo Government claims amounting to \$12 million, there being altogether 1,100 cases calling for attention. Investigation was forthwith begun in January 1932 by the Fengtien Provincial Commercial Contracts Liquidation Committee which had been created by the Hsinking Government shortly after it had come into existence. The Committee headed by K. Sakatani, Japanese adviser to the Finance Department of the Manchoukuo Government, after inquiries conducted with collaboration of foreign representatives including the American, British, German, Japanese, and Danish consular authorities, publicly announced the following plan in December 1932.

1. Claims the contracts for which were concluded since 1930 and wherein goods were duly delivered amount to approximately ¥7,110,000. Of this amount, 35% or approximately ¥2,500,000 will be paid in cash during the fiscal year of the first year of Tatung (July 1, 1932—June 30, 1933), and 20% or approximately ¥1,500,000 during the fiscal year of the second year of Tatung, in uniform ratio to all creditors. The balance of this sum will be paid in 3% bonds redeemable in 20 years, whose total face value shall be equivalent to the sum to be paid;
2. In regard to the contracts agreed upon prior to and including 1929, as well for those for which goods were not delivered, totalling ¥5,310,000 or thereabouts, the sum of the contracts or damages incurred in each case shall be reasonably decided upon after careful investigation, and be paid in similar bonds with a face value equivalent to the sum so decided.

The Manchoukuo Government by its two successive installment payments paid up to October 1933 a total of ¥2,816,993 in cash. In September of the same year a special ordinance of the Finance Ministry was issued to provide bonds for the liquidation of out-

standing obligations to the total of ¥5,516,899, settlements being made with interested foreign nationals through several branches of the Central Bank of Manchou. The following table shows the amount of cash and bonds paid for liquidation of claims due under the old regime, according to countries:

Creditor nations	In cash	In bonds	Fractional sums paid in cash	Total
Manchoukuo	¥1,065,982.96	¥930,850.00	¥6,278.19	¥2,003,115.15
Japan	902,051.58	1,543,100.00	387.49	2,446,313.41
Britain	196,207.22	191,050.00	387.49	387,644.71
U.S.A.	45,133.21	47,950.00	327.61	93,410.82
Germany	598,956.68	2,086,700.00	575.02	2,686,231.70
France	3,645.38	94,400.00	57.57	98,103.45
Sweden	935.00	750.00	15.00	1,700.00
Holland	—	250,000.00	—	250,000.00
Denmark	3,491.19	2,750.00	64.58	6,305.77
Others	589.65	400.00	82.46	1,072.11
Total	2,816,993.37	5,147,950.00	8,949.75	7,973,893.12

GERMAN-MANCHOUKUO TRADE AGREEMENTS

On April 30, 1936, a trade agreement was reached between Germany and Manchoukuo to be effective for one year commencing June 1, 1936. The arrangement proved satisfactory to the contracting parties and its renewal was effected, with modifications, upon the lapse of the agreement. The latest contract which is for the period of one year commencing June 1, 1940 was signed at Hsinking on September 12, 1940. The joint communique issued by the contracting parties on the same day reads as follows:

"As the Manchoukuo-Reich agreement concerning foreign trade and payments between the two countries, which was concluded on September 14, 1938, had expired on May 31 this year, the Manchoukuo and German Governments conducted negotiations for some time on steps to be taken in the future. As a result of these negotiations the two Governments reached an agreement of views to make certain revisions in the above Agreement so as to conform to the present situation, and to extend the agreement for another year retroactive from June 1. The agreement for renewal of the Trade Agreement was signed in Hsinking today by the plenipotentiaries of the two countries."

The text of the trade agreement reached on May 31, 1939 reads as follows:

1. In case payments for German goods imported into Manchoukuo exceed the amount paid in Reichmarks into the special account in accordance with the provisions of Articles 1 to 3, the German Government shall make arrangements so as to enable the bank designated in Article 2 to secure loans from German banks to the extent of 45,000,000 Reichmarks, during the period from June 1, 1939 to May 31, 1940.

2. If payments for Manchurian products imported into Germany exceed the amounts specified by the provisions of Articles 1 to 3, the total amount of the excess may be paid in Reichmark into the special account, "Manchoukuo Y," kept in the bank designated in Article 2. The said total amount shall not, however, exceed 45,000,000 Reichmarks, during the period from June 1, 1939 to May 31, 1940.

3. Loans obtained in accordance with Section 1 above, by the bank designated in Article 2, may be repaid with Reichmarks paid into the special account in conformity with the provisions of Articles 2 and 3 and of Section 2 above.

4. In case imports to be accounted for the preceding year are completely carried out, and in case loans for this year are granted in accordance with Section 1, payments into the special account, "Manchoukuo Y," may be made in conformity with Section 2 above to the extent of 20,000,000 Reichmarks, along with the payments provided for in Articles 2 and 3, even if the import of Manchurian products provided for in Articles 1 to 3 may not have been completely carried out.

5. The present Agreement shall remain as long in force as the Convention concerning the exchange of commodities and payment between Manchoukuo and Germany.

Any loans still outstanding after the expiry of the Convention may be paid conformably to the provisions of the present Agreement.

Done in duplicate in Hsinking, this thirty-first day of the fifth month of the sixth year of Kangte, corresponding to May 31, 1939.

In behalf of the Government of Manchoukuo, Tsai Yun-sheng L.S.

In behalf of the German Government, Dr. Wilhelm Wagner L.S.

The Department of Finance and Commerce of Manchoukuo issued a statement on May 31, 1939, reviewing the trend of the German-Manchoukuo trade agreements from its inception in 1936. Excerpts from the statement are as follows:

"We may take this opportunity to survey the development of Manchoukuo-German trade since the first agreement was concluded between the two countries on April 30, 1936. During the one-year period following that date, Manchoukuo imports from Germany amounted to 13,000,000 yuan in value, while exports to Germany reached 53,000,000 yuan. Principal items of imports were

machinery, 4,000,000 yuan; iron and steel, 2,000,000; dye-stuffs and paints 1,600,000 yuan; cameras, etc., 1,000,000 yuan. Exports comprised beans, 37,000,000 yuan; bean oil 8,000,000 yuan; groundnuts, 5,000,000 yuan. During the second year of the trade agreement, Manchoukuo imports increased to 22,000,000 yuan, while exports to Germany rose to 60,000,000 yuan. Imports included machinery, 10,500,000 yuan; chemicals and paints, 3,300,000 yuan; iron and steel, 4,500,000 yuan. Exports consisted of beans, 42,000,000 yuan; bean oil, 7,000,000 yuan; groundnuts, 3,000,000 yuan, etc. In the eleven months ending April 30, Manchoukuo imports from Germany totalled 43,000,000 yuan in value, while exports to Germany amounted to 130,000,000 yuan. Imports comprised machinery, 29,000,000 yuan; iron and steel, 4,600,000 yuan; miscellaneous goods, 500,000 yuan. Principal items of exports during this period were beans, 110,000,000 yuan; bean oil, 8,500,000 yuan. With certain additions and subtractions, trade accounts between the two countries worked out as follows:

(In 1,000 yuan)

	German payments	Manchoukuo payments
First Year	63,000	13,000
Second Year	79,000	37,000
Third Year	139,000	86,000

"Such are, briefly, the results of the Manchoukuo-German trade agreements. A steady market is thus assured for Manchoukuo beans, enabling the country to maintain and improve the standard of life of its agricultural population, while the imports from Germany, consisting as they do of machinery, iron, steel, etc., are a great contribution to the progress of the five-year programme."

CHAPTER XIII JUDICATURE

The Government of Manchoukuo, with the assistance of Japanese jurists, gave early attention to the matter of reforming the judicial system that had been adopted from China. Under the organic Law the Government guaranteed independence of the judiciary from other branches of the administration. Judges are now appointed for life and enjoy independence in the discharge of their duties. Nor can they be dismissed against their wish, except in case of trial for criminal offences or disciplinary punishment.

The former system of farming out judicial and prison functions by contract was abolished. In order to exterminate corrupt and mercenary practices, the judicial organs were placed under the central organ, all its expenses being now defrayed from the state budget. For improvement of the qualifications of judicial officials, their appointment was made subject to state examination. A system was at the same time introduced for sending Manchu judicial officials abroad to receive adequate legal training. The administration of prisons where sanitation was utterly neglected before was placed in the hands of efficient and humane officials. The way was thus prepared for public justice, in its true and full sense, in the country where in its name undecidable crimes used to be committed with impunity.

HISTORICAL

The peculiar Chinese conceptions of public justice were transplanted to Manchuria through the ages of changing dynasties and prevailed there until the birth of the new state of Manchoukuo. As the courts of justice and its administrators were always held in contempt in China, so they were regarded in Manchuria and men of equality or ability remained disdainfully aloof from the province of jurisdiction. Justice was administered in so far as it

pleased the most arbitrary of war lords who ruled with force; courts of justice were over-ruled wherever the mighty lord found necessary; decisions of the bench were tampered with whenever occasion arose; the penalties declared in court were changed or commuted by commercial bargaining; and the prisons were run under contract and on a business basis.

What an European writer said regarding the judicial administration of China in the pre-republican times equally applied to Manchuria, where efforts at reform were absent. He wrote: "Under the old system practically every provincial official, except those having the territorial jurisdiction, exercised judicial as well as administrative functions. This, to a large extent, accounts for the hopeless inefficiency and maladministration of the law courts. Bribery and torture were the rule rather than the exception, and it was difficult, if not impossible, to obtain justice. The cruelties practised in the yamens and the inhumane methods of punishment employed in the prisons, forced the Treaty Powers to claim extraterritorial rights over their own nationals."

The reform of China's judicial system which was begun in 1910 by native jurists chiefly trained in Japan was followed by successive steps to the same end. The codification of the penal and civil laws was practically completed in 1921, with the assistance of foreign experts, especially Japanese and French jurists. All these legal reforms were in due course introduced to Manchuria but were given little countenance by the war lords who had their own reasons to oppose change.

Department of Justice

The Department of Justice forms part of the State Council. Subject to guidance of the Prime Minister, the Minister of Justice exercises supervision over the courts, procurators' offices, and prisons, and has charge of the administrative business concerning civil, criminal, and non-contentious cases, penal administration, national and land registration, as well as other matters. He is assisted by a Vice-Minister. The Department of Justice comprises the Secretariat and three Bureaux, namely, the Bureau of Civil Affairs, Bureau of Criminal Affairs, and Bureau of Penal Administration. The Secretariat consists of the Personnel, Documents, Accounts, and Research Material Sections, while the Bureaux have

each three sections. There are in addition several councillors specially charged with the drafting of laws. The Department also conducts training institutes for judicial and penal officers.

Courts

Besides trying civil and criminal cases, the courts are competent to deal with non-contentious and other matters. The supreme court, the high court, the district court, and the sub-district courts are the four grades of courts in Manchoukuo.

The sub-district court has original jurisdiction in respect of cases (1) involving 2,000 yuan or less, (2) arising out of leases of buildings, or (3) based on possessory rights. In criminal matters, it has original jurisdiction over cases not under the jurisdiction of other courts. In the absence of statutory provisions to the contrary, this court deals with non-contentious cases. In this court a single judge tries all cases.

The district court has original jurisdiction over civil cases (1) not belonging to the competence of the sub-district court, or (2) relating to bankruptcy. In criminal matters, original jurisdiction over (1) cases of felony or (2) cases of misdemeanor liable to imprisonment or heavier penalties belongs to the district court. This court also hears (1) appeals from verdicts of the sub-district court, or (2) protests against verdicts of courts other than the sub-district court, with the exception of cases which belong to the competence of the high court. In the district court, a single judge tries cases of first instance; cases of second instance are heard by three judges forming a collegium.

The high court is the tribunal of first instance respecting cases (1) of rebellion or (2) treason while it is the court of second instance in hearing (1) appeals from judgments rendered by the district court in first instance, or (2) cases protesting against verdicts other than those rendered by the district court in first instance, with the exception of cases which come under the jurisdiction of the supreme court. The judgments of the high court are final for (1) appeals from verdicts rendered by the district court in appellate instance, or (2) cases protesting against verdicts rendered by the district court in appellate instance, or (3) cases protesting against decisions of dismissal in the sub-district court. In

the high court all cases are tried by three judges forming a collegium.

The supreme court has original and final jurisdiction over cases of high treason, while its judgments are final for (1) appeals from verdicts rendered by the high court, or (2) appeals from verdicts rendered by the district court in first instance, or (3) cases protesting against verdicts other than those rendered by the high court in first or second instance, or (4) cases protesting against decisions of dismissal in the district court. The supreme court has a collegium of five judges.

The judges conduct trials and render judgments independently and in accordance with law. The administrative business of the sub-district court is disposed of by the supervising judge or the single judge of the same court, while in any of the higher courts, the president or presiding judge has charge of this business. The president is assisted by a vice-president.

Table 1. NUMBER OF JUDICIAL COURTS AND HIGH PROCURATORS' OFFICES

(September 1, 1938)

	Kirin	Mukden	Harbin	Chinchow	Tsitsihar	Total
High Court	1	1	1	1	1	5
High Court branch	1	4	2	1	2	10
Local Court	3	12	4	4	6	29
Local Court branch	4	13	3	2	2	24
District Court	19	29	19	16	14	97
District Court branch	4	4	6	3	8	25
High Procurators Office ..	1	1	1	1	1	5
High Procurators branch ..	1	4	2	1	2	10
Local Procurators Office ..	3	12	4	4	6	29
Local Procurators branch ..	4	13	3	2	2	24
District Procurators Office	19	29	19	16	14	97

Note: The Supreme Court is located in Hsinking.

Procurators' Offices

The sub-district procurator's office, the district procurator's office, the high procurator's office, and the supreme procurator's office are attached respectively to the sub-district court, the district court, the high court, and the supreme court. The procurators have charge of the detection, search, and prosecution of

crimes, as well as the direction of the execution of criminal judgments. Their activities are limited within the spheres over which the courts to which they are respectively attached exercise jurisdiction, except in cases of emergency or where provided by laws and ordinances. In such exceptional cases, they may effectively intervene outside their own spheres or beyond their ordinary authority. In the exercise of their authority, the procurators are subject to the instructions of their superiors, especially of the Minister of Justice.

Table 2. CRIMES AND ARRESTS CLASSIFIED

Crimes	No. of Cases	Arrests	
		Cases	Criminals
Rebellion	5	5	10
Foreign Troubles	2	2	3
Disturbance of Diplomatic Relations	—	—	—
Disgrace of Official Honour	199	191	288
Disgrace of Official duties	117	108	163
Disturbance of Election	3	3	4
Disturbance of Public Peace	306	295	472
Escape	93	81	121
Criminals concealed	149	147	210
Perjury and Calumny	270	272	381
Public Danger	565	473	602
Forgery of coins	156	153	257
Forgery of measure instruments	5	5	7
Forgery of documents and securities	85	85	130
Corruption of Public Morals	222	313	525
Disturbance of Marriage and Home	934	885	1,678
Profanity of Rites, Defilement of Tombs and corps	99	87	176
Obstruction of business	10	10	18
Opium-smoking	2,110	2,071	2,791
Gambling	2,470	2,401	11,164
Murder	951	757	11,217
Battery and assault	1,474	1,398	2,146
Abortion	11	11	15
Desertion	24	22	37
Disturbance of Freedom	158	160	250
Defamation of Honour and Trust	53	51	68
Disturbance of Civil Secret	12	11	14
Larceny	8,584	7,165	9,317
Burglary and Pirating	11,635	4,874	8,423
Trespassing	371	351	534

(Continued)

Crimes	No. of Cases	Arrests	
		Cases	Criminals
Fraud	1,275	1,256	1,787
Black-mailing	171	159	247
Stolen goods concealed	552	528	808
Damage	31	29	38
Total	33,202	24,359	43,901
Violation of Temporary Insurgents Suppression Law	218	106	187
Violation of Robber and Bandit Suppression Law	10,150	3,963	5,843
Violation of Opium Law	2,401	2,397	3,484
Violation of Others	159	159	184
Total	12,928	6,625	9,698
Violation of Police Regulations	12,425	12,294	20,445
Violation of Fire-arms Controlling Regulations	1,536	1,536	2,562
Violation of "Pao-Chia" (Civil Guards) Regulations	50	50	442
Violation of Others	582	578	949
Total	14,593	14,458	24,398
GRAND TOTAL	60,723	45,442	77,997

Special Judicial Organs

In regard to the Hsingan Provinces, which form Special Administrative Districts and contain a large Mongol population, the Provisional Regulations Concerning the Courts in the Hsingan Provinces were promulgated and enforced, September 1, 1937. The said Regulations provide for the establishment of courts and procurators' offices in the Special Administrative Districts.

The courts established in these districts under the Regulations above-mentioned, exercise jurisdiction over the same categories of civil, criminal, and non-contentious cases as are taken cognizance of by other sub-district and district courts of Manchoukuo, with the exception of appeals from the district court. Judicial commissioners, instead of judges, are appointed to the courts in the Hsingan districts, and these commissioners, who are heads of banners or hsien, exercise the functions of judges. Under certain circumstances, lieutenant-commissioners, instead of regular commissioners, may be appointed. The procurators' offices in the Hsingan Provinces exercise their functions within the spheres covered by the courts to which they are respectively attached. Pro-

curatorial commissioners, instead of procurators, are appointed to these offices.

Prisons

Prison officials are responsible for the enforcement of criminal judgments, under the supervision of the Minister of Justice. The heads of prisons have vice-heads to assist them in the discharge of their duties. Branch prisons are located in important places within a prison district. The heads of branch prisons have also vice-heads to assist them.

Judicial Reform

Shortly after the establishment of Manchoukuo, the Department of Justice drew up a basic plan to eliminate the shortcomings obtaining in the previous regime. The plan consisted of four points, namely, (1) the firm establishment of the judicial system, (2) enactment or codification of laws, (3) improvement of personnel, and (4) perfection of material equipment.

Establishment of System. The essential point of the problem was to create a system which fully guaranteed a fair administration of justice. Laying, therefore, the highest importance on this point, the Department of Justice drafted a bill governing the organization of courts, which was duly enacted, and enforced July 1, 1936. In order to ensure a full and efficient discharge of judicial business, the Act set up severe qualifications for the appointment of judicial officers, and established the age-limit for them, while guaranteeing their tenure of office. Simultaneously with the enforcement of the Act, reorganization of courts and procurators' offices was taken in hand, in accordance with its provisions. Considering that this required a heavy expenditure, that it was obviously impossible to obtain personnel at one time for all courts and procurators' offices, and also that there were many districts where it was not advisable to introduce immediate reform, the reorganization effected during 1936 was limited to the reconstruction of the courts and procurators' offices established under the previous Organization Act. As regards other courts and procurators' offices, it was decided to complete the reorganization within four years from 1937, with the exception of the judicial organs in the Hsingan Provinces. The task was taken in hand beginning

with the organs in more important towns. A small number of establishments in outlying districts still remained to be reorganized, and these too were to be reconstructed before the end of 1940.

As regards the judicial organs in the Hsingan Provinces, their reorganization in the same basis as the organs in other parts of Manchoukuo was considered rather premature in view of the standard of life, manners and customs, characteristics of suits, facilities of communication, and other conditions in the said region. It was decided, therefore, to establish special judicial organs ad tempore, in the Hsingan Provinces. For this purpose, the Provisional Regulations Concerning the Courts in the Hsingan Provinces were promulgated and enforced on September 1, 1937.

As regards penal administration, the Ordinance Concerning the Organization of Prisons had already been issued in April, 1935, to reorganize the system on a uniform basis. The prisons existing at the time were of a miscellaneous nature and all of them were under the control of the high procurator, with the Minister of Justice exercising only secondary supervision. The prison administration lacked system, which hindered the progress of penal administration in general. In view of this situation, the Minister of Justice took all the prisons under his direct supervision, and started their reorganization. However, from considerations of expenditure, personnel, and other matters, it was again obviously impossible to carry out simultaneous reform of all prisons; so it was decided to begin with the reorganization of important prisons, to be followed by the reform of other prisons, and this at an equal pace with the construction of law courts. This task was to be completed within 1940. In the Hsingan Provinces, the banner and hsien prisons are to be retained for the time being.

Codification of Laws

As regards the codification or enactment of laws, it was essential to expedite the labours, in order to meet the requirements of the new State. Immediately following the establishment of Manchoukuo, it was proclaimed that existing laws should continue in force, so far as they were not in conflict with the spirit of national foundation, conditions of the country, laws and ordinances newly issued. It was recognized from the beginning that a legal system congenial to the soil and in harmony with the spirit

of national foundation and life must be established at an early date. In the spring of 1933, therefore, the Law Inquiry Commission was created in the Department of Justice. The compilation of such basic laws as Civil, Commercial, and Criminal Codes, Civil and Criminal Procedure Codes required special official personnel to attend to the task, as well as the collaboration of authorities in legal circles. Considering this necessity, the Department of Justice, in October, 1934, appointed several legal councillors, who organized a drafting committee together with other members of the Department. While studying the manners and customs in the country and other relevant matters the committee proceeded with its task, and the drafts thus obtained were submitted for examination to the Code Enacting Committee, which included non-official legal experts. To make matters doubly sure, the Department of Justice obtained the services of Japanese legal authorities, who acted as advisors. The enactment of the above-mentioned codes, as well as a number of other important laws, was completed before the end of 1937.

Improvement of Personnel

Considering that under the previous system, the prestige of the judicature was at an extremely low ebb, owing to the inferior quality of the personnel, the Department of Justice felt an urgent need of improvement in this respect. In October, 1934, therefore, the Department opened a Law School under its control, enrolling mostly Manchus and instructing them in jurisprudence and ethics. The graduates from the School were employed as assistant judicial officers, to be appointed regular officers after examination on the completion of a period of practical training. The School turned out 60 or 70 graduates each year, who gave a satisfactory account of themselves in official life. On the reorganization of the School as a Law College in April, 1939, the Department of Justice created a new training institute for judicial and penal officers, where a good number are now receiving instruction.

Under the former system, the appointment of judicial personnel was swayed by private considerations, for this was done mainly by recommendation, not by examination—with the result that the personnel steadily declined in quality. In order to remove the cause of the decline, so far as the method of appointment went,

by making personal character and capacity the criterion for appointment, the Government, in July, 1936, issued the Judicial Examination Ordinance and other regulations, which proved effective in realizing the desired object. The ordinance and regulations above mentioned were abolished in October, 1938, when the Civil Service Ordinance, applicable to the government officials in general, was promulgated and enforced. The object of the Civil Service Ordinance was quite the same as that of the abolished ordinance and regulations, so that there was no change in substance, in the method of appointing judicial officers.

In view of the fact that the improvement of judicial service on Manchoukuo depended largely upon Japanese personnel, and that the despatch of judicial business required an adequate number of such personnel, the practice was inaugurated in 1934 of transferring each year a certain number of Japanese judicial officers in active service to Manchoukuo to be appointed judges or procurators in the new State—a practice which has resulted in a marked improvement in the standard of justice, as well as in judicial administration in general.

As a means of uplifting the Manchu personnel in the judicial service, the Government instituted in the same year a system of sending promising Manchu members to Japan to study jurisprudence and learn the spirit of justice in that country, under the guidance of the judges and procurators of the Supreme Court. Over a dozen such officers were sent each year, and on their return from Japan after a stay of one year (prescribed period), these Manchus showed admirable improvement in their capacity as judicial officers. The system is still in force. Further, for the purpose of making the Manchu presidents and chief procurators of law courts acquainted with the conduct of judicial procedure as well as general conditions in Japan, the Government inaugurated, also in 1934, the annual despatch of a dozen or more of such senior members, with highly satisfactory results. Regarding penal officers, a similar system is also in force. In addition, conferences of judicial officers, and also lecture meetings for such officers, are held from time to time, for the purpose of study or instruction. As the cumulative result of all these efforts, the judicial service in Manchoukuo has improved markedly.

Table 3. NUMBER OF JUDICIAL OFFICERS DESPATCHED TO JAPAN FOR STUDY

	Judicial Officers				Prison Officers			Grand Total
	Judges	Procu-rators	Other Officers	Total	Chief wardens	Other Officers	Total	
1934	6	5	—	11	6	1	7	18
1935	8	4	1	13	8	2	10	23
1936	7	5	1	13	9	3	12	25
1937	8	4	1	13	10	1	11	24
1938	9	5	—	14	13	—	13	27
1939	7	5	—	12	10	1	11	23

Material Equipment

As regards the construction and repair of court and prison buildings, simultaneous execution was of course impossible from considerations of expenditure and building material. It was decided therefore to begin with the construction and repair of the more important ones. This plan has been pursued during the last few years, and the work has now been practically completed, so far as court and prison buildings in important centres are concerned. The New Court Building in Hsinking, which shelters under its roof all the courts and procurators' offices in the capital, from the supreme court and supreme procurator's office downwards, is an imposing structure built in modern style, a structure fit to be the temple of justice in the new State.

Representative of the new prison buildings is that of the Second Prison in Mukden, with a capacity for 1,200 persons, and with cells, workshops, medical quarters, preachers' quarters, lecture halls, etc., all designed in the latest style. Particularly, the workshops are a model of perfection.

The construction of principal court and prison buildings have thus been completed; but taking the country as a whole, much still remains to be done in this direction. Owing to the current economic conditions, the work may be delayed to some extent; but within the prescribed limits, the best effort is being made to expedite the work.

As described in the preceding paragraphs, the Government has continued its efforts for the firm establishment of the judicial system, codification of laws, improvement of personnel, and perfection of material equipment—all in a coordinated manner.

Ancillary or Supplementary Institutions

The creation of various ancillary or supplementary institutions was another important matter, from the standpoint of securing the harmonious working of the judicial system. For this purpose, the Government has adopted several measures, of which the Conciliation Act, Notaries Act, and Advocates Act are the principal ones.

The Conciliation Act was put into effect December 1, 1937. The two important characteristics of the system enforced are the recognition of compulsory conciliation and the application of this method to a wide range of cases. In civil actions, which of course presuppose two contesting parties, the procedure is complicated, involving a high cost and requiring much time. Moreover, it happens not infrequently that a satisfactory solution of disputes is unattainable by this method. Therefore, in addition to regular civil procedure, it is important to provide a simplified method, by which an equitable settlement of civil disputes may be attained. The system of conciliation put into force, December, 1937, is yielding highly satisfactory results, for the greater number of such disputes are being solved by this method. In response to the desires of the inhabitants in country districts, circuit conciliation was introduced in January, 1940.

A system of public notaries had been in force in certain parts of the country. After the enactment of principal laws and ordinances relating to civil matters, it was necessary to improve the system and extend it throughout the country. Thus the Notaries Act was enacted and enforced, December 1, 1937.

As regards the legal profession, the system previously in force was extremely defective, in that it lacked a clear definition of the responsibilities of advocates. It was therefore out of harmony with the judicial system in the new State. The public held the advocates in low esteem, as generally unfit to assist in the administration of justice. To remedy this state of affairs, the old system was replaced by a new enactment, which was promulgated and enforced December 20, 1936. In accordance with the new Law, local bar associations, as well as a nationwide association of lawyers, were formed for the improvement of the status of advocates, promotion of harmony within the profession, etc. At the same time, more strict qualifications were set up for admission to

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1937	8	4	1	13	10	1	11	24
1938	9	5	—	14	13	—	13	27
1939	7	5	—	12	10	1	11	23

Material Equipment

As regards the construction and repair of court and prison buildings, simultaneous execution was of course impossible from considerations of expenditure and building material. It was decided therefore to begin with the construction and repair of the more important ones. This plan has been pursued during the last few years, and the work has now been practically completed, so far as court and prison buildings in important centres are concerned. The New Court Building in Hsinking, which shelters under its roof all the courts and procurators' offices in the capital, from the supreme court and supreme procurator's office downwards, is an imposing structure built in modern style, a structure fit to be the temple of justice in the new State.

Representative of the new prison buildings is that of the Second Prison in Mukden, with a capacity for 1,200 persons, and with cells, workshops, medical quarters, preachers' quarters, lecture halls, etc., all designed in the latest style. Particularly, the workshops are a model of perfection.

The construction of principal court and prison buildings have thus been completed; but taking the country as a whole, much still remains to be done in this direction. Owing to the current economic conditions, the work may be delayed to some extent; but within the prescribed limits, the best effort is being made to expedite the work.

As described in the preceding paragraphs, the Government has continued its efforts for the firm establishment of the judicial system, codification of laws, improvement of personnel, and perfection of material equipment—all in a coordinated manner.

Ancillary or Supplementary Institutions

The creation of various ancillary or supplementary institutions was another important matter, from the standpoint of securing the harmonious working of the judicial system. For this purpose, the Government has adopted several measures, of which the Conciliation Act, Notaries Act, and Advocates Act are the principal ones.

The Conciliation Act was put into effect December 1, 1937. The two important characteristics of the system enforced are the recognition of compulsory conciliation and the application of this method to a wide range of cases. In civil actions, which of course presuppose two contesting parties, the procedure is complicated, involving a high cost and requiring much time. Moreover, it happens not infrequently that a satisfactory solution of disputes is unattainable by this method. Therefore, in addition to regular civil procedure, it is important to provide a simplified method, by which an equitable settlement of civil disputes may be attained. The system of conciliation put into force, December, 1937, is yielding highly satisfactory results, for the greater number of such disputes are being solved by this method. In response to the desires of the inhabitants in country districts, circuit conciliation was introduced in January, 1940.

A system of public notaries had been in force in certain parts of the country. After the enactment of principal laws and ordinances relating to civil matters, it was necessary to improve the system and extend it throughout the country. Thus the Notaries Act was enacted and enforced, December 1, 1937.

As regards the legal profession, the system previously in force was extremely defective, in that it lacked a clear definition of the responsibilities of advocates. It was therefore out of harmony with the judicial system in the new State. The public held the advocates in low esteem, as generally unfit to assist in the administration of justice. To remedy this state of affairs, the old system was replaced by a new enactment, which was promulgated and enforced December 20, 1936. In accordance with the new Law, local bar associations, as well as a nationwide association of lawyers, were formed for the improvement of the status of advocates, promotion of harmony within the profession, etc. At the same time, more strict qualifications were set up for admission to

the bar, licences being granted only after consulting a committee composed of leading officials in the Department of Justice. As a result of these measures, noteworthy progress is taking place in the quality of the legal profession.

In addition to the measures mentioned above, an Act Concerning Judicial Cooperation Between Manchoukuo and Japan was put into effect soon after the renunciation by the latter of its extraterritorial rights in Manchoukuo. Further, under an Act of May 12, 1938, a Public Peace Division was created in the supreme court as well as in the high court, with Judges and Procurators of Public Peace, to deal in a speedy and effective manner with cases connected with public peace, thus strengthening the safeguard against "ideological" offences.

As the cumulative result of these measures, the judicial machinery has attained a high degree of efficiency, not merely in the preservation of peace and order, but in the maintenance of private rights. Surveying the conditions following the abolition of extraterritoriality, it may be stated with perfect accuracy that the Japanese residents in Manchoukuo have suffered no abridgement of their rights because of the abolition; on the contrary, they have benefitted in business transactions, and daily life by the simplification of legal forms and procedure. The benefits to the Manchus are no less considerable, so the unitary administration of justice is working to the advantage of both Manchoukuo and Japan.

Penal Administration

Before the establishment of Manchoukuo, the authorities concerned with penal administration had no constructive plans or ideas, beyond that the criminals be put into prisons and be subjected to pain. Prison discipline was, moreover, extremely lax. Under these conditions it was out of the question to hope for any satisfactory result from punishments. As has been already stated, the Government took steps, as a previous condition, to bring various penal institutions under unified control. The criminals must of course be isolated from the community, but the object of punishment is to bring them back to decent life through discipline and instruction imparted during the period of isolation. This point was strongly impressed upon penal officers and prison officials, while completing arrangements, in personnel and material equip-

ment, for carrying out this essential task.

Labor in prison is admittedly the best practical method not only for reforming criminals but for enabling them to earn an honest living after discharge. Despite the fact that the penal law laid down prison labor as a means of punishment, there were at the start of Manchoukuo only a few prisons, where work—simple handicraft work at that—was imposed. In other prisons, the convicts were kept in absolute idleness, which meant an unqualified financial loss, besides having a serious demoralizing effect upon the convicts themselves. In 1934, therefore, machine work was introduced in several of the larger prisons, and the same arrangement was extended to other prisons in succeeding years. In 1937, the Special Account for Prisons was established to place prison finance on a separate basis. The products of prison labor during 1939 were 200 times the amount of 1934.

Table 4. STATISTICS OF PRISON INMATES IN 1935

(A) Classified by Crimes

(1) Criminal Law

Crime:	Male	Female	Total
Rebellion	14	—	14
Foreign troubles	1	—	1
Disgrace of official Honour	49	—	49
Disturbance of official duty	31	—	31
Disturbance of public peace	24	1	25
Escape	28	—	28
Criminal Concealed	21	2	23
Perjury	88	7	95
Public Danger	52	1	53
Forgery of coins	46	4	50
Forgery of documents & securities	36	—	36
Corruption of public moral	65	8	73
Disturbance of marriage & home	156	30	186
Profanity of Rites, defilement of tombs and crops	70	—	70
Opium smoking	131	6	137
Gambling	123	1	124
Murder	580	88	668
Battery and assault	203	13	216
Abortion	1	—	1
Desertion	3	1	4
Disturbance of freedom	44	8	52

(Continued)

Crime:	Male	Female	Total
Defamation of honour & trust	6	—	6
Larceny	2,353	5	2,358
Burglary & pirating	3,853	11	3,864
Trespassing	86	1	87
Fraud & misfeasance	281	6	287
Blackmailing	159	—	159
Stolen goods concealed	153	6	159
Damage	6	1	7
Total	8,663	200	8,863

(2) Special Law

Violation of:	Male	Female	Total
Temporary Insurgents Suppression Law	73	1	74
Robber & Bandit Suppression Law	2,446	8	2,454
Temporary arm & ammunition Law	133	4	137
Opium Law	39	1	40
Total incl. others	2,723	14	2,737
Grand Total	11,386	214	11,600

(B) Term of Penalty

Period:	Male	Female	Total
Life	432	9	441
above 15 years	610	21	631
below 15 "	1,921	26	1,947
" 10 "	1,832	23	1,855
" 5 "	1,579	25	1,604
" 3 "	708	13	721
" 2 "	1,536	26	1,562
" 1 "	1,230	27	1,257
" 6 months	988	20	1,008
" 3 "	472	22	494
Total	11,308	212	11,520
under detention	78	2	80
Grand total	11,386	214	11,600

(C) By Age Groups

Age:	Male	Female	Total
below 15 years	95	5	100
" 20 "	344	9	353
" 30 "	5,021	63	5,084
" 50 "	5,234	113	5,347
" 60 "	598	19	617
over 60 "	88	5	93

(Continued)

Age:	Male	Female	Total
" 70 "	6	—	6
Total	11,386	214	11,600
of which:			
1st offenders	11,171	214	11,385
with previous records	215	—	215
Total	11,386	214	11,600

AN ACT GOVERNING THE ORGANIZATION OF COURTS

January 4, 1936

(An Unofficial Translation)

BOOK I

COMPOSITION AND POWERS OF COURTS AND
PROCURATORS' OFFICES

Chapter I

General Provisions

Art. 1. The courts shall try civil and criminal cases and shall exercise jurisdiction, as determined by law, over non-contentious and other matters.

Art. 2. The procurators' offices shall have charge of the conduct of detection, search, and indictment of crimes, direction of the execution of criminal sentences, as well as other matters provided by law.

Art. 3. There shall be four grades of courts, as follows:

1. Sub-district court;
2. District court;
3. High court;
4. Supreme court.

Art. 4. The sub-district procurator's office shall be attached to the sub-district court, the district procurator's office to the district court, the high procurator's office to the high court, and the supreme procurator's office to the supreme court.

Art. 5. The Minister of Justice may establish branches of the district and high courts to make such branch courts discharge part of the business of the district and high courts. He may also establish branches of the district procurator's and high procurator's offices for a similar purpose.

Art. 6. The courts shall have judges and the procurators' offices procurators.

Art. 7. The jurisdiction of a sub-district court shall be exercised by a single judge.

In respect of cases of first instance, the jurisdiction of a district court shall be exercised by a single judge; in regard to cases of second instance,

the jurisdiction of the same court shall be exercised by three judges constituting a collegium.

The jurisdiction of a high court shall be exercised by three judges constituting a collegium.

Art. 8. The powers of a procurator's office shall be exercised by the procurator.

Art. 9. The judges shall discharge their duties with independence and in accordance with law, while the procurators shall be subject to the direction of their superiors in the discharge of their duties.

The Minister of Justice is entitled to give directions to the procurators in the discharge of their duties.

Art. 10. The sub-district court which has two or more judges shall have a supervising judge, while the district court, the high court, and the supreme court shall each have a president.

The district court, the high court, and the supreme court may also each have a vice-president.

Art. 11. The sub-district procurator's office which has two or more procurators shall have a supervising procurator; while the district procurator's office, the high procurator's office, and the supreme procurator's office shall each have a head.

The district procurator's office, the high procurator's office, and the supreme procurator's office may also have a vice-head.

Art. 12. The courts and procurators' offices shall each have a clerk or clerks.

The clerk shall assist at trials, keep records, have custody of documents, and carry out such other duties as are provided by laws and ordinances. He shall also discharge general business of the court or procurator's office, at the direction of his superiors.

Art. 13. The president of a court, the head of a procurator's office, the supervising judge, and the supervising procurator may order the student judicial officer to temporarily discharge the business of a clerk.

Art. 14. A supervising clerk shall be appointed to the sub-district court and sub-district procurator's office; a chief clerk to the district court, the high court, and the supreme court. A chief clerk shall also be appointed to the district procurator's office, the high procurator's office, and the supreme procurator's office.

Art. 15. The courts and procurators' offices may each have an interpreter or interpreters appointed.

Art. 16. The sub-district court shall have a bailiff and a despatch official.

The bailiff shall have charge of the execution of judgments, as well as other matters provided by laws and ordinances; while the despatch official shall be responsible for the despatch of documents, as well as for the discharge of other business provided by laws and ordinances.

Art. 17. The establishment and abolition of courts and procurator's offices, as well as the geographical extent of courts shall be determined by law.

The geographical extent of the jurisdiction of a procurator's office shall be identical with that of the court to which it is attached.

Chapter II

Sub-District Court

Art. 18. The sub-district court shall have original jurisdiction respecting the following categories of civil cases:

1. Cases involving a sum not exceeding 2,000 yuan;
2. Cases arising out of lease contracts of houses;
3. Cases based on possessory rights.

Art. 19. The sub-district court shall have original jurisdiction respecting criminal cases, with the exception of those coming under the jurisdiction of other courts.

Art. 20. The sub-district court shall have original jurisdiction respecting non-contentious cases, in the absence of statutory provisions to the contrary.

Art. 21. The business of registration, which is among non-contentious matters under the jurisdiction of the sub-district court, may be discharged by the clerk.

Art. 22. The Minister of Justice may establish a branch office or offices to discharge part of the registration business of a sub-district court.

Chapter III

District Court

Art. 23. The district court shall have original jurisdiction in respect of the following categories of civil cases:

1. Cases other than those coming under the jurisdiction of the sub-district court;
2. Cases of bankruptcy.

Art. 24. The district court shall have original jurisdiction in respect of the following categories of criminal cases:

1. Cases of felony;
2. Such cases of misdemeanor as are complex in nature and circumstance and liable to imprisonment or heavier penalties.

Art. 25. The district court shall have appellate jurisdiction in respect of the following:

1. Appeals from verdicts of the sub-district court;
2. Cases protesting against verdicts of courts other than the sub-district court, excepting cases coming under the jurisdiction of the high court.

Art. 26. A district court shall have civil and criminal divisions created within it.

Either division shall be composed of three judges, one of them acting as presiding judge.

The Minister of Justice is, however, entitled to determine the number of divisions.

Art. 27. When a division of the district court conducts a trial, one and only one probationary judge may be added to the membership of the division.

Art. 28. A division of the district court shall have a chairman.

The president or vice-president of a district court shall be chairman of a division.

The chairman of a division shall be presiding judge of the same division. In case the chairman is incapacitated or unavailable, the senior member of the division shall fill the place of chairman.

Chapter IV

High Court

Art. 29. The high court shall have original jurisdiction respecting the following categories of criminal cases:

1. Rebellion;
2. Treason.

Art. 30. The high court shall have appellate jurisdiction in respect of the following cases:

1. Appeals from verdicts rendered by the district court in original instance;
2. Cases protesting against verdicts other than those rendered by the district court in original instance, with the exception of cases coming under the jurisdiction of the supreme court.

Art. 31. The high court shall have final jurisdiction respecting the following categories of cases:

1. Appeals from verdicts rendered by the district court in appellate (second) instance, as well as those of the sub-district court;
2. Cases protesting against verdicts of courts excluding those rendered by the district court in appellate instance;
3. Cases protesting against decisions of dismissal in the sub-district court.

Art. 32. The interpretations of laws and ordinance adopted by the high court in verdicts of final instance shall be binding upon the inferior courts, in regard to cases of the same character.

Art. 33. The high court shall have civil and criminal divisions created within it.

Either division shall be composed of three judges, one of them acting as presiding judge.

The Minister of Justice is, however, entitled to determine the number of divisions.

Art. 34. A division of the high court shall have a chairman.

The president or vice-president of the court shall be chairman of a division.

The chairman of a division shall be presiding judge of the same divi-

sion. If the chairman is incapacitated or unavailable, the senior member of the division shall fill the place of chairman.

Chapter V

Supreme Court

Art. 35. The supreme court shall have original and final jurisdiction respecting criminal cases of high treason.

Art. 36. The supreme court shall have final jurisdiction in respect of the following categories of cases:

1. Appeals from verdicts of the high court, as well as from those rendered by the district court in original instance;
2. Cases protesting against verdict other than those rendered by the high court in original and appellate instances;
3. Cases protesting against decisions of dismissal in the district court.

Art. 37. The interpretations of laws and ordinances adopted by the supreme court in final verdicts shall be binding upon the inferior courts, in regard to cases of the same character.

Art. 38. The supreme court shall have civil and criminal divisions created within it.

Either division shall be composed of five judges, one of them acting as presiding judge.

The Minister of Justice is, however, entitled to determine the number of divisions.

Art. 39. Either division of the supreme court shall have a chairman.

The president or vice-president of the court shall be chairman of a division.

The chairman of a division shall be presiding judge of the same division. If the chairman of a division is incapacitated or unavailable, the senior member of the division shall fill the place of chairman.

Art. 40. If the supreme court should render a verdict differing, in the interpretation of laws and ordinances, from a previous judgment rendered by the same court, the matter shall be determined by joint session of the divisions.

A joint session shall be organized with the entire membership of the civil or criminal division or of the civil and criminal divisions, according to the nature of the case.

At the request of the division handling the case, the president of the court shall order a trial by joint session and determine the organization of the joint session.

Art. 41. Trials by joint session of the divisions shall not be held without the attendance of two-thirds of the members.

The president of the court shall be presiding judge of the joint session. If the president is incapacitated or unavailable, the senior member shall fill the place of president.

Chapter VI

Procurators' Offices

Art. 42. The procurators' offices of various grades shall exercise the powers mentioned in Article 2 of the present Act, in respect of matters lying within the jurisdiction of the courts, to which they are severally attached.

Art. 43. The Minister of Justice may order the student judicial officer and clerk of a sub-district procurator's office, as well as police officers and gendarmerie officers in the area under the same office, to discharge the duties of a sub-district procurator.

Art. 44. The provisions of Article 42 shall not affect the validity of detection and other acts performed by procurators in areas beyond the jurisdiction of their offices, in case of emergency or where there are specific provisions in laws and ordinances.

Art. 45. The supreme procurator's office, the high procurator's office, and the district procurator's office shall each have jurisdiction over appeals from decisions of non-indictment made by the procurator's office standing immediately below them.

BOOK II

PERSONAL OF COURTS AND PROCURATORS' OFFICES

Chapter I

Judges and Procurators

Art. 46. The judges and procurators are appointed from among persons who possess any of the following qualifications:

1. Persons who have received practical training as student judicial officers in courts and procurators' offices for 18 months or more and have passed the prescribed examination;
2. Persons who have taught law for three years or more, as professors or assistant professors, in law schools under the Department of Justice;
3. Persons who have practised law as advocates for five years or more.
4. Persons who are qualified to be judges or procurators in other countries.

Art. 47. Persons who fall under any of the following conditions may not be appointed judges or procurators:

1. Those who have been sentenced to imprisonment or heavier penalties;
2. Those who are not yet rehabilitated after sentence of bankruptcy;
3. Those who have been dismissed from official service by way of disciplinary punishment or who have not yet been reinstated as advocates after having been deprived of their status.

Art. 48. The student judicial officers are selected from among those who possess any of the following qualifications:

1. Persons who have graduated from law schools under the Department of Justice;
2. Persons who have passed the judicial examination;
3. Persons who are qualified to be student judicial officers in other countries.

Matters relating to the judicial examination shall be determined by Imperial ordinance.

Art. 49. Matters relating to the practical training and examination of student judicial officers shall be determined by the Minister of Justice.

Art. 50. The Minister of Justice may deprive any student judicial officer of his status, if the former recognizes that the latter is unfit to become a judge or procurator on account of his behavior or ability.

Art. 51. The Minister of Justice may order newly appointed judges or procurators to serve for a time in sub-district or district courts, or in sub-district or district procurators' offices, in the capacity of probationary judges or procurators.

The probationary judges and procurators exercise the same functions as the judges and procurators of the courts and offices to which they are assigned, in the absence of statutory provisions to the contrary.

Art. 52. The judges and procurators shall be of the tojen, kannin, or chienjen rank.

Art. 53. The posts of president of the supreme court and head of the supreme procurator's office shall be filled by a judge or procurator of the tojen rank, personally appointed by the Emperor on recommendation of the Minister of Justice.

The posts of vice-president and chairman of a division of the supreme court, as well as the president and vice-president of the high court shall be filled by judges of the kannin rank, appointed by the Emperor on recommendation of the Minister of Justice. The posts of vice-head of the supreme procurator's office, head and vice-head of the high procurator's office shall be filled by procurators also of the kannin rank, appointed by the Emperor on recommendation of the Minister of Justice.

The judges and procurators other than those mentioned in the two preceding paragraphs shall be judges of the kannin or chienjen rank, appointed by the Minister of Justice.

Art. 54. No person who has not been a judge for five years may be appointed a judge of the supreme court.

Art. 55. If persons who are qualified to be judges have served in any of the capacities mentioned below, the period so served shall be counted as the period served as judges, for purposes of the preceding Article:

1. Procurators;
2. Higher officials in the Department of Justice;
3. Military or naval law officers;
4. Professors or assistant professors in law schools under the Department of Justice;
5. Advocates in active practice of law.

The same rule applies to persons who are qualified to be judges and who have served in other countries either as judges or in the capacities corresponding to Items I, II, III, and V mentioned above.

Art. 56. The following activities are incompatible with the status of judges and procurators:

1. To participate in politics or to become members of a political party or political society;
 2. To engage in commerce or to become officials of business corporations.
- A judge cannot be at the same time an administrative official.

Art. 57. If a judge or procurator is sentenced to imprisonment or heavier penalties or has been declared bankrupt in court, he shall lose his office.

Art. 58. Judges and procurators shall retire from service when they have reached the statutory age-limit.

The age-limit for the president and vice-president of the supreme court, as well as for the head and vice-head of the supreme procurator's office shall be sixty-three years, while that for other judges and procurators shall be sixty years.

Art. 59. Those judges and procurators who have become unfit to discharge their duties on account of mental or physical debility may be retired by resolution of the Committee for the Appointment and Removal of Judicial Officers.

Art. 60. The Minister of Justice may, if he deems it necessary for reasons of judicial administration, remove judges to other posts, after a resolution of the Committee for the Appointment and Removal of Judicial Officers.

Art. 61. If there are no vacant posts for the judges and procurators of the courts and offices which have either been abolished or reorganized, the Minister of Justice may place them on half-pay to wait for new vacant posts.

Art. 62. Apart from the five preceding Articles, no judges or procurators shall be relieved of their posts or be removed to other posts or services or be subjected to a reduction of their salaries, against their will, except by way of disciplinary punishment.

The above rule does not apply, however, when judges are transferred to be procurators for reasons of judicial administration.

Judges and procurators shall not be suspended from the discharge of their duties, except where provided by law.

Art. 63. Those judges and procurators who are suspended from the exercise of their duties shall receive half-pay during the term of suspension; but no such pay shall be granted in case of suspension for disciplinary punishment.

Art. 64. Matters relating to the disciplinary punishment of judges and procurators shall be determined by law.

Art. 65. Matters relating to the Committee for the Appointment and Removal of Judicial Officers shall be determined by Imperial ordinance.

Chapter II

Clerks and Interpreters

Art. 66. The clerks shall be appointed from among those who have passed the prescribed examination or who are qualified to be clerks in other countries.

Matters relating to the examination for clerks shall be officials of the chienjen or weijen rank.

The chief clerks of the supreme court, the high court, the supreme procurator's office, and the high procurator's office shall be of the chienjen rank; while the chief clerks of the district court and the district procurator's office shall be either of the chienjen or weijen rank; clerks other than those mentioned above being either of the chienjen or weijen rank. All the clerks shall be appointed by the Minister of Justice.

Art. 68. The chief clerks and supervising clerks direct and supervise the business of other clerks in matters of judicial administration, under instructions of their superiors.

Art. 69. The method for the discharge of business by the clerks shall be determined by the Minister of Justice.

Art. 70. The interpreters shall be either of the chienjen or weijen rank, and shall be appointed by the Minister of Justice.

Chapter III

Bailiffs and Despatch Officials

Art. 71. The bailiffs are chosen from among those who have passed the prescribed examination or who are qualified to be bailiffs in other countries.

Matters relating to the examination for bailiffs shall be determined by the Minister of Justice.

Art. 72. The bailiffs and despatch officials shall be officials of the chienjen or weijen rank.

Art. 73. The bailiffs shall be appointed by the Minister of Justice, and the despatch officials by the presidents of the district courts having jurisdiction over the area in which the sub-district courts to which the said despatch officials are to belong are located.

Art. 74. The bailiffs and despatch officials shall discharge their duties within the jurisdictional areas of the district courts in which the sub-district courts to which they belong are located.

Art. 75. Matters relating to the conduct of business by bailiffs and despatch officials shall be determined by the Minister of Justice.

Chapter IV

Warders

Art. 76. The courts and procurators' office shall have warders. The warders shall be officials of the weijen rank.

The warders shall be appointed by the president of the courts and heads of the procurator's offices to which they are to belong, with the exception of the warders of the sub-district procurators' offices, who shall be appointed by the president of the district court or head of the district procurator's office, within whose jurisdictional area the sub-district court or the sub-district procurator's office in question is located.

Art. 77. The warders conduct persons concerned with law suits, by order of the judges, procurators, and clerks; they engage also in other business as determined by the Minister of Justice.

Art. 78. The warders may be ordered to attend to the despatch of documents, if the despatch officials are incapacitated or unavailable.

BOOK III

DISPOSAL OF JUDICIAL BUSINESS

Chapter I

Assignment of Duties and Substitution

Art. 79. The judicial year begins on January 1 and ends on December 31.

Art. 80. The disposition of the chairmen and members of divisions of the district court, the high court, and the supreme court shall be fixed beforehand for each year by the presidents of the respective courts in consultation with the vice-presidents and the chairmen of divisions.

Art. 81. The judicial business of a court shall be assigned, in accordance with Business Regulations, to each judge in the case of a sub-district court, to each division and each judge in the case of a district court, and to each division in the case of a high court and the supreme court.

The assignment of the business of a court, mentioned in the preceding paragraph, shall be fixed beforehand for each year: by the supervising judge in respect of a sub-district court; by the president of a district court in consultation with the vice-president, for the purpose of trying cases of first instance in that court; by the president of the same court (district court) in consultation with the vice-president and heads of divisions, for trying cases of second instance; while in respect of a high court and the supreme court, the assignment shall be made by the presidents of the respective courts in consultation with the vice-presidents and the chairmen of divisions.

Art. 82. When the assignment for a year has been made, it shall not be altered during the year, unless the apportionment comes to lack proportion or unless one or more judges become incapacitated, partially or entirely, owing to illness or other unavoidable circumstances.

Art. 83. When a judge of a sub-district court becomes incapacitated from discharging his duties owing to unavoidable circumstances, another judge of the court shall act as substitute.

The order of substitution shall be fixed beforehand for each year by the supervising judge.

Art. 84. If there is no judge to act as substitute in the case mentioned in the preceding Article, the president of the district court having jurisdiction over the area in which the sub-district court in question is located may order a judge of his court or of another sub-district court in the area under the jurisdiction of his court to act as substitute, after consultation with the vice-president.

Art. 85. If a judge of a district court is incapacitated from discharging his duties owing to unavoidable circumstances, another judge of the same court shall act as substitute.

The order of substitution, mentioned in the preceding paragraph, shall be fixed beforehand for each year by the president of the district court in consultation with the vice-president, for the purpose of trying cases of first instance; by the president in consultation with the vice-president and the chairmen of divisions, for trying cases of second instance.

Art. 86. If there is no judge to act as substitute in the case mentioned in the preceding Article, the president of the district court concerned may order a judge of a sub-district court in the jurisdictional area of the said district court to act as substitute, after consultation with the vice-president and the chairmen of divisions in conformity with the procedure prescribed by the second paragraph of the same Article.

Art. 87. If a judge of a high court is incapacitated from discharging his duties owing to unavoidable circumstances, another judge of the same court shall act as substitute.

The order of substitution referred to in the preceding paragraph shall be fixed beforehand for each year by the president in consultation with the vice-president and the chairmen of divisions.

Art. 88. If there is no judge to act as substitute in accordance with the provisions of the preceding Article, the president of the high court concerned may order a judge of a district court in the jurisdictional area of his court to act as substitute, after consultation with the vice-president and chairmen of divisions.

Article 89. If a judge of the supreme court is incapacitated from discharging his duties owing to unavoidable circumstances, another judge of the same court shall act as substitute.

As regards the substitution mentioned in the preceding paragraph, the president of the supreme court shall fix the order beforehand for each year, in consultation with the vice-president and the chairmen of divisions.

Art. 90. If there is no judge to act as substitute in accordance with the provisions of the preceding Article, the president of the supreme court may order a judge of a high court to act as substitute, after consultation with the vice-president and the chairmen of divisions.

Article 91. In case there are circumstances preventing a sub-district court from discharging its duties, partially or entirely, the Minister of Justice may order another sub-district court in the same jurisdictional area of a district court, in which the sub-district court in question is located, to act as substitute.

Art. 92. The duties of a procurator's office shall be distributed, in accordance with Business Regulation, by the supervising procurator to other procurators in the case of a sub-district office; while in respect of a district procurator's office, a high procurator's office, and the supreme procurator's office, the said duties shall be distributed by the heads of the respective offices, after consultation with the vice-heads.

Art. 93. After consultation with the vice-head, the head of a procurator's office may himself discharge the business of another procurator's office within the jurisdictional area of his office, or may order the vice-head of his office or other procurators within the same jurisdictional area to discharge such business.

Art. 94. The Business Regulations for Courts and Procurators' Offices shall be determined by the Minister of Justice.

Chapter II

Opening of the Court

Art. 95. Public trials shall be held in the courts and branch courts. In case there are special reasons, public trials may be held in other courts within the same jurisdictional area or in other places, with the sanction of the Minister of Justice.

Art. 96. Public trials shall not be held, unless a quorum of judges are present.

In case the president of a court deems it necessary, he may cause a judge additional to the regular membership of the court to assist in a trial, at the request of the judge presiding over the trial.

If a judge who is a regular member is incapacitated, the additional member in question shall be included in the regular membership until the close of the trial.

Art. 97. The decision to suspend the public conduct of a trial must be publicly announced, with reasons stated.

Even after the closing of the trial to the public, the president of the court concerned may allow or admit those persons he may consider proper, to witness the proceedings.

Art. 98. The presiding judge has the right to maintain order in the court while a trial is proceeding.

Art. 99. The presiding judge may deny admittance to those persons whose presence may injure the dignity of the court or disturb order in the court. He may also expel such persons from the court.

Art. 100. If the presiding judge deems it necessary for the purpose of maintaining order in the court, he is entitled to order those persons who have disturbed the trial or have made improper utterances and behavior, to be held in detention until the close of the proceedings.

Art. 101. When the public conduct of a trial has been suspended or when a certain person or persons have been denied admittance or expelled from the court in accordance with the provisions of Article 99, the facts as

well as the reasons therefor shall be placed on the record of the proceedings. The same rule applies when a person or persons have been held in detention in accordance with Article 100.

Art. 102. The single judge who exercises the jurisdiction of a court shall have the same powers as those of the presiding judge defined in the second paragraph of Article 97 and the three articles from Article 98 to Article 100 inclusive.

Art. 103. When the judges, procurators, clerks, interpreters, and advocates conduct their duties in public trials, they must wear prescribed gowns.

Chapter III

Collegial Verdicts

Art. 104. In the case of collegial verdicts, the judgments to be rendered by the court shall be determined by majority opinion of judges forming a quorum, in conformity with the provisions of the present Act.

Art. 105. The presiding judge calls the collegium and presides over the deliberations.

Art. 106. In the sitting of the collegium, the expression of opinion shall begin with the junior judge and end with the presiding judge.

The judges cannot refuse to express their opinion.

Art. 107. If the judges are divided, in regard to a monetary amount, into three or more opinions, none of which represents the majority of the judges, the opinion proposing the highest amount shall be combined successively with the opinions proposing the next highest amounts, until the combined opinion comes to represent the majority of judges.

If in a criminal case the judges are divided into three or more opinions, none of which represent the majority of the judges, the opinion most unfavourable to the defendant or defendants shall be combined successively with opinions less unfavourable, until the combined opinion comes to represent the majority of the judges.

Art. 108. The consultations of the collegium shall be held in camera, but student judicial officers may be admitted to witness the deliberations.

The course of deliberations, opinions of individual judges, and number of judges taking different opinions shall neither be published nor disclosed.

Chapter IV

Collaboration in Judicial Business

Art. 109. The courts shall collaborate with one another in the discharge of their duties in accordance with provisions of law.

The request for collaboration shall be made, except where otherwise provided by law, to the sub-district court in the locality where the act of collaboration is to take place.

Art. 110. The procurators' offices shall collaborate with one another in the discharge of their duties, in conformity with the provisions of laws and ordinances.

Art. 111. The clerks, judicial police officers, and bailiffs shall collaborate with one another in the discharge of their business, in conformity with laws and ordinances.

BOOK IV

ADMINISTRATIVE SUPERVISION

Chapter I

Organs of Judicial Administration

Art. 112. The president of a court and the head of a procurator's office have charge of the administrative business of their respective court or office.

The senior president of a branch court, the senior head of a branch procurator's office and the chairman of a division of a court have charge of the administrative business of their respective branch court, office, or division.

The vice-president of a court and the vice-head of a procurator's office shall respectively assist the president of the court and the head of the procurator's office in the discharge of administrative business.

Art. 113. If the president of a court or the head of a procurator's office is incapacitated from discharging his duties, the vice-president or the vice-head shall act in place of the president or the head. If the vice-president or the vice-head is unavailable, the senior chairman of the divisions of the court or the senior procurator of the office shall be acting president or acting head.

If a supervising judge or supervising procurator is incapacitated, the senior judge or senior procurator shall act in place of either. If the single judge of a court or the single procurator of a procurator's office is incapacitated, the judge or the procurator who discharge the judicial business of either shall also discharge the administrative business.

If the senior president of a branch court, the senior head of a branch procurators office or the chairman of a division of a court is incapacitated, the president, procurator, or judge next in order of seniority shall be acting senior president, acting senior head, or acting chairman.

Art. 114. Those who are in charge of administrative business must submit opinions concerning administrative organization, judicial administration, and other matters, and present material connected therewith, if ordered or consulted by the Minister of Justice or other supervising authorities.

Chapter II

Exercise of Supervisory Authority

Art. 115. The administrative supervisory authority must be exercised in conformity with the following provisions:

1. The Minister of Justice supervises all the courts and procurators' offices;

2. The president of the supreme court supervises the same court; the head of the supreme procurator's office the same office and inferior procurators' offices;
3. The president of a high court supervises the same court, its branches, and the inferior courts within the area under its jurisdiction; the head of a high procurator's office the same office, its branches, and the inferior procurators' offices within the area under its jurisdiction;
4. The president of a district court supervises the same court, its branches, and the sub-district courts within the area under its jurisdiction; the head of a district procurator's office the same offices, its branches, and the sub-district procurators' offices within the area under its jurisdiction;
5. The supervising judge or the single judge of a sub-district court supervises the same court; the supervising procurator or the single procurator of a sub-district procurator's office the same office.

Art. 116. The judicial police, as well as other personnel exercising the function of judicial police in accordance with laws and ordinances, are subject to the supervision of the Minister of Justice and the procurators' offices concerned.

Art. 117. The supervising officer shall warn those who neglect their official duties and whose behavior is unsatisfactory to mend their ways. Before giving a warning, however, the supervising officer must allow those concerned to explain themselves.

Art. 118. The warning mentioned in the preceding Article shall neither affect nor prevent the institution of a disciplinary action.

Art. 119. In case the parties concerned hold any disposal of judicial business as improper, such parties may report the matter to the Minister of Justice to have his supervising authority put in action, provided that there are no relevant provisions in the Procedure Codes and other laws and ordinances, laying down the method of appeal in such case.

Art. 120. The administrative supervisory authority shall not be exercised in any manner whatever to interfere in the trial or to influence the verdict of judges.

Supplementary Provision

The date of the enforcement of the present Act shall be determined by Imperial ordinance. (The Act was enforced by such ordinance on July 1, 1936).

CHAPTER XIV LAND DEVELOPMENT

Japanese Settlers

The question of bringing about a mass colonization movement of Japanese into Manchoukuo has received keen attention since 1932. The major programme drawn up for this purpose calls for transplanting a total of five million Japanese colonists to Manchoukuo during a span of two decades. By the crystallization of this plan it is hoped to accelerate the exploitation of the agricultural and industrial resources of Manchoukuo, as well as in lessening to some extent the population question of Japan proper.

Table 1. TWENTY-YEAR PLAN FOR IMPLANTING 1,000,000 JAPANESE FAMILIES (5,000,000 PERSONS) IN MANCHOUKUO

	Group (Households)	Collective (Households)	Total (Households)	Youth Volunteers (Persons)
1st stage:				
1937	5,000	1,000	6,000	—
1938	5,000	1,000	6,000	30,000
1939	10,000	1,000	11,000	30,000
1940	20,000	10,000	30,000	30,000
1941	30,000	17,000	47,000	30,000
Total	100,000	70,000	30,000	120,000
2nd stage:				
1942-1946	120,000	80,000	200,000	200,000
3rd stage:				
1947-1951	140,000	160,000	300,000	300,000
4th stage:				
1952-1956	170,000	230,000	400,000	400,000
Grand total ..	500,000	500,000	1,000,000	1,000,000

Note: "Group" settlers are formed by the Government of the emigrating country, consisting of 200 to 300 households, while "Collective" is formed of independent settlers usually of over ten households.

The authorities in charge are of the opinion that these five million Japanese immigrants can be settled comfortably and lucratively on Manchuria soil. Whether a larger number of Japanese farmers can obtain similar accommodations is still open to discus-

sion since it is believed that there is a definite limit to the area of suitable farming lands obtainable. At present the governments of Manchoukuo and Japan are extending assistance to the Japanese settlers in various ways, such as in the granting of subsidies in such forms as furnishing transportation fares, in making advances for the acquirement of living quarters and farming implements, and in purchasing agricultural produce from such settlers at an attractive price.

Table 2. PER HOUSEHOLD GOVERNMENT SUBSIDY
(As revised since 1940)

Kind:	Scale of group (Households)	For Equipments (M¥)	Sup- plementary Subsidy (M¥)	Travelling Expenses (M¥)	Total (M¥)
Group Settlers	300	891	30	240	1,161
Group Settlers	200	938	39	240	1,217
Collective Settlers ...	50	772	18	240	1,030
Free Settlers	—	400	—	200	600
Industrial Settlers ..	—	2,000	—	200	2,200
Other Settlers	—	—	—	200	200

The efforts of the Japanese settlers are being directed to the adoption of western agricultural methods and machinery, since it is impractical for the Japanese to compete economically against the native farmers using the same agricultural methods of the latter.

As regards competition from cheaper native labour, the Japanese farmers have yet to meet with any inconvenience and in fact, the lower standard of living of the Manchurians would seem to be advantageous as long as it lasts, since the Japanese farmer at present is more in the position of an employer than otherwise in his relations with native laborers.

The Manchurian Incident of September 1931 was an influential turning point in the history of Japanese immigration into Manchuria. The necessity for the encouragement of immigration into Manchuria was just as keen before the Incident as it was after, but due to the numerous dangers and obstacles such as the prohibition of land leases and obstruction placed by the Chang warlord regime, not to mention constant bandit threats, it was rather impossible for the Japanese Government to formulate plans

or policies for the promotion of immigration into Manchuria. Only sporadic and inconsistent immigration took place, and even this slow and negligible rate was subjected to the antagonistic attitude of the Chinese authorities, and confined primarily to the narrow Kwantung Leased Territory and the South Manchuria Railway Zone. Only three cases of immigration that took place within this period as a group can be named, the Aikawa Village immigrants, a group of army reserves, and a group encouraged by the Dairen Agricultural Company, but these, as it was the case with individual immigrants, ended in failure.

The greater part of the above immigrants were mainly inclined toward contract labour to meet the demands of capitalists rather than pure immigrants, and sought to settle down in commercial occupation in the urban districts, while those that emigrated to Manchuria after the Incident had uppermost in their minds the pursuit of their own occupation or to open farms, and were mainly agricultural people.

However, these immigrants and their motives offered much suggestion and working basis to well prepared large-scale immigration plans formulated after the Manchurian Incident.

Experimental Period (1932-1936). As a result of the Manchurian Incident the various obstacles brought to bear upon the Japanese, were effectively eradicated in 1931. The Japanese settlers were now entitled to hold land and to carry on commerce, and contrary to the previous situation, received much encouragement from the Manchoukuo Government, under whose efficient administration, peace, order and safety replaced the chaotic conditions prevalent in the past years. Consequently, the Overseas Ministry of the Japanese Government drew up definite plans in 1932 to promote the immigration of Japanese farmers into Manchuria seeking to send as many individuals or families that desired or were capable of cultivating farm lands. Great care was taken by the above authorities to pursue a different immigration policy than that followed heretofore in sending contract labourers or employees destined for settlement in the Kwantung Leased Territory or the South Manchuria Railway Zone.

Thus, the Overseas Ministry decided to carry out its initial experimental immigration programme which called for the sending of approximately 2,800 families in five stages during the years

beginning with 1932 and ending in 1936. The results of this programme were carefully studied from all angles.

Simultaneous with the above programme, others were carried out, some of them being private affairs. The main ones included the immigrants of the Tenrikyo Sect, Tenshoen, and the railway guard settlements sponsored by the South Manchuria Railway's General Directorate of Railways.

Stage of Large-scale Settlements (1937—). The experimental immigration projects were generally successful. On one hand, the Government of Manchoukuo passed a law to protect and aid Japanese agricultural immigrants coming into the country. In 1935, the Manchuria Immigration Association was formed, and carried on advertisements, recruiting of prospective immigrants, and looked after preliminary training of the recruits. Then in the earlier part of 1936, the Manchuria Colonization Joint-stock Company capitalized at ¥15,000,000, was formally inaugurated, and authorized to handle immigration affairs in behalf of settlers such as negotiation for land leases, jurisdiction and distribution of land, to create establishments and institutions for immigrants, and to handle financial matters. Finally, in July of the same year, the Overseas Ministry in Tokyo adopted concrete plans to send a total of 1,000,000 families (5,000,000 persons) to Manchuria over a period of twenty years, as a result of careful deliberation in the Japanese Cabinet supported mainly by the success of the Fifth Experimental Immigration. According to this gigantic project, a total of 10,000 families will be sent during the first five years, or the first stage, and will begin with 6,000 families in 1937.

Since it was felt that the programme was too gigantic for the Manchuria Colonization Company to handle alone, another concern, the Manchuria Colonization Company capitalized at MY50,000,000, a Japanese-Manchoukuo joint enterprise, was created at Hsinking on August 2, 1937, with the signing of the Japan-Manchoukuo Treaty concerning this company. This new Manchuria Colonization Company absorbed the old Company, and stood ready to meet all demands and attention necessary to facilitate and foster Japanese immigration into Manchuria.

For the past thirty years since 1905, the Japanese made diligent efforts, and met numerous hardships in their attempt to colonize Manchuria, but the main avenue of immigration into the land

of opportunities was not fully open to them until 1936, when a wholehearted policy was adopted and pursued. The bitter experience and sacrifices seen during these thirty years were certainly not made in vain.

Japanese Settlers before the Manchurian Incident

It was seen before that Japanese immigration was confined to the Kwantung Leased Territory, and the railway zone. For this reason, it is quite appropriate to review the conditions in these regions before proceeding further.

Railway Guard Settlers. Between the years 1914 and 1917, the South Manchuria Railway adopted plans to accommodate men retiring from the railway guard service, and permitted them to settle down in the railway areas for experimental purposes. Thirty families accepted this offer during the four years. Despite the conveniences and assistance given by the South Manchuria Railway, such as low rates on land leases, low cost of farmhouse construction, low prices of farm tools, and other agricultural conveniences, the results proved very discouraging, since many of the original settlers abandoned the settlements, leaving only seventeen families by 1933. Four reasons can be given as the cause of failure.

1. There were individuals in the group that dreamt of fabulous wealth, and cared little for farming.
2. Some leased their land to Chinese farmers and sought profits as landlords.
3. No systematized agriculture was practised.
4. Disregarding the conditions in Manchuria, the settlers sought luxuries in their economic life.

Settlers from Aikawa Village. People from the Aikawa Village were motivated to settle in Manchuria upon the encouragement of the Kwantung Government, when in 1918, it settled nineteen families on rice farms. The Government allotted land, houses, and agricultural implements to those that desired to settle, but due to (1) the lack of irrigation, (2) poor selection of settlers, and (3) the discouragement of the immigrants in that their first harvest was very poor, the results were anything but encouraging. Consequently, only three families out of the original nineteen remained, but in 1925, the Kwantung Government remedied

the situation by building a reservoir, and brightened the prospects of paddy rice farming. However, the difficulties seen during the past decade were not completely removed, but in 1936, the Kwantung authorities set aside a sector of land for Japanese farmers, giving out land for the asking. The recipients sold part of the free land and liquidated their previous debts, and paved the way for a brighter future.

At the present time, there are 42 cho (one cho equivalent to 2.45 acres) of paddy rice fields, and 60 cho for other crops, while the yield for 1936 was 1,600 koku (one koku equivalent to 4,962 bushels), and the number of families increased to seven. These seven families account for sixty-five individuals.

The Dairen Agricultural Company's Activities. The Dairen Agricultural Company was established in 1929 with a capital of ¥10,000,000 (¥5,000,000 paid up), to foster immigration into the Kwantung Leased Territory as one way to relieve the unemployment and food shortage problem in Japan. Its functions centered around the promotion and facilitation of immigrants as distribution of land, recruiting, guidance and instruction of settlers, etc. The entire capital of the Company was supplied by the South Manchuria Railway Company.

Plans at that time called for the distribution of 5,000 cho of land, 2,500 cho of which were cultivated land to be bought up from private owners, while the other 2,500 cho were government owned to be leased or given out, but as the result of investigations, it was found that there were not enough government land to be used for this purpose. In consequence, the area of private owned land was considerably increased. 500 families were to be accommodated in this plan. However, the bought up land at the present time totals 3,800 cho and the government land 700 cho or 4,500 cho in all, but only 74 families have taken advantage of the offer, a number far below the planned figure. The following are the reasons given for the cool popular attitude.

1. The relative high price of land.
2. Increasing liabilities after settlement.
3. Lack of spiritual cooperation among the settlers.
4. Difficulty in obtaining funds in Japan before immigrating, due to the financial troubles in Japan.

Under such circumstances, the necessity of studying immigra-

tion problems and possibilities was keenly felt, and consequently, recruiting of prospective immigrants was suspended for a time after 1932. Yet the total agricultural produce obtained in 1935 by Japanese immigrants were: cereals 1,954 koku, vegetables 895,000 kan (one kan equivalent to 8.28 pounds), and fruits 3,540 kan.

The East Asia Industrial Company. Aside from the above attempts, the East Asia Industrial Company (Toa Kangyo Kabushiki Kaisha) needs to be mentioned here. This company was established in the latter part of 1920 with a capital of ¥20,000,000 to conduct agricultural enterprises, recruiting and settling of immigrants, carrying out agricultural transactions, and financing. Its field of activities covered a wide area, but the oppressive tactics brought into play by the former Northeastern regime just before the Manchurian Incident proved so effective that the major part of its functions had to be abandoned. With the establishment of Manchoukuo, these hindrances were immediately removed, and the company again resumed its activities. However, the rice fields under its control are cultivated by Korean immigrants and fields for other crops by Manchus.

There were other private attempts made by Japanese individuals, but aside from the fruit farms in the Kwantung Leased Territory and the South Manchuria Railway Zone, all have ended in failure.

The development of new settlements is shown below:

Table 3. STATISTICS OF JAPANESE GROUP SETTLERS
(July, 1939)

Group Year No. Settled	Province	Population					Total
		House head	Wife	Newly born infants	School children	Others	
1st 1932	Sankiang	293	295	392	57	237	1,274
2nd 1933	"	346	317	348	76	214	1,301
3rd 1934	Peian	203	198	158	62	141	762
4th 1935	Tungan	429	369	220	54	105	1,177
5th 1936	"	1,039	923	283	202	308	2,755

(Continued)

Group Year No. Settled	Province	House head	Wife	Population			Total
				Newly born infants	School children	Others	
6th	1937 Antung	1,678	860	28	578	923	4,067
	1937 Sankiang	1,604	708	11	434	670	3,425
	1937 Peian	911	584	23	249	284	2,051
	Total	4,193	2,152	62	1,259	1,877	9,543
7th	1938 Kirin	767	223	7	127	219	1,343
	1938 Pinkiang	1,747	224	5	91	146	2,221
	1938 Peian	720	83	1	4	63	871
	1938 Lungkiang	162	29	—	—	10	201
	1938 Sankiang	361	30	—	54	6	451
	1938 Antung	198	18	—	—	1	217
Total	3,957	607	13	282	445	5,304	
8th	1939 Sankiang	492	—	—	—	2	494
	1939 Peian	256	6	—	—	—	262
	1939 Pinkiang	368	3	—	—	3	274
	1939 Mutankiang	217	—	—	—	—	217
	1939 Lungkiang	269	—	—	—	—	269
	1939 Kirin	97	—	—	—	—	97
Total	1,699	9	—	—	5	1,713	
GRAND TOTAL		12,159	4,870	1,476	1,992	3,332	23,829

(B) Area Under Crops

(Unit: Tan: Tan=0.245 acre)

Group No.	Rice paddy	Wheat	Soya bean	Total area	Area per household
1st	2,500	2,380	13,430	27,700	94.5
2nd	350	6,840	8,600	26,080	75.4
3rd	4,190	7,870	9,130	29,370	144.7
4th	3,650	6,550	10,920	36,140	82.4
5th	16,217	10,130	17,224	62,970	78.9
6th	18,940	20,250	26,740	116,030	27.7
7th	17,570	5,940	10,660	60,260	15.2
8th	8,800	1,555	4,330	35,112	20.7
Total	67,317	61,515	101,034	393,662	32.5

(C) No. of Livestocks

Group No.	Horned cattle	Sheep	Pig	Chicken	Bees (box)
1st	144	500	718	1,851	142
2nd	479	1,300	1,427	13,117	49
3rd	31	500	636	688	—
4th	340	885	804	1,031	50
5th	364	1,882	828	831	192

(Continued)

Group No.	Horned cattle	Sheep	Pig	Chicken	Bees (box)
6th	1,273	1,363	1,601	29,146	106
7th	473	—	790	1,528	139
8th	47	21	91	279	13
Total	3,151	6,451	6,896	48,471	691

Table 4. STATISTICS OF COLLECTIVE SETTLERS
(Dec. 1939)

(A) Number of Settlers

Province:	No. of Households		Wife	Children	Others	Total
	Scheduled	Actual				
Kirin	1,401	519	285	520	64	1,388
Pinkiang	580	235	101	323	79	738
Peian	170	110	67	148	24	349
Sankiang	450	285	58	77	10	430
Tungan	130	51	9	17	—	77
Hsingan N.	175	64	19	12	2	97
Fengtien	450	127	45	92	1	265
Mutankiang ...	310	48	5	3	18	74
Hsinking	80	38	26	94	14	172
Hsingan S.	55	49	26	36	4	115
Total	3,801	1,526	641	1,322	216	3,705

(B) Area Under Crops (Hectare)

	Rice	Soya bean	Kaoliang	Maize	Millet	Wheat	Total incl. Others
Kirin	1,197	496	111	103	111	16	2,492
Pinkiang	110	344	74	82	101	193	1,148
Peian	11	25	—	3	6	2	113
Sankiang	90	791	58	39	60	97	1,249
Tungan	37	15	—	6	—	—	59
Hsingan N. ...	—	—	—	—	—	390	636
Fengtien	17	38	8	3	8	—	150
Mutankiang ...	36	92	3	4	4	34	185
Hsinking	—	14	13	1	—	—	118
Hsingan S. ...	—	89	471	69	243	—	1,001
Total	1,499	1,904	738	308	533	742	7,264

Table 5. RAILWAY SELF-PROTECTIVE VILLAGES

(As in April, 1939)

1st period:	Year Settled	Place	No. of Households	Population	Area Under Crops (hectares)
Nuerho	1935	Chin, Chinchow Prov. ...	10	29	110.0
Heishantao	"	Hailung, Fengtien Prov. .	18	60	163.2
Koutsien	"	Yenki, Kirin Prov.	10	56	83.5
Suihua	"	Suihua, Pinkiang Prov. .	9	33	168.0
Taian	"	Koshan, Lungkiang Prov.	11	32	304.7
Paichengtzu ...	"	Taoan, " "	11	43	186.0
2nd period:					
Chiaoho	1936	Kemu, Kirin Prov.	29	106	231.0
Shaocheng	"	Sulan, Kirin Prov.	29	103	180.0
Shanshih	"	Ningan, Mutankiang Prov.	20	59	171.4
Shwangchengpao	"	Pinkiang Prov.	13	41	175.6
Anta	"	" " " " " " " " " "	8	28	157.6
Lungchen	"	" " " " " " " " " "	20	64	300.0
Chaikang	"	Nen-an, Kirin Prov.	9	30	96.0
3rd period:					
Kaoshantzu	1937	Heishan, Chinchow Prov.	22	81	130.0
Kaoshantun	"	Panshih, Kirin Prov. ...	30	85	231.0
Mingcheng	"	" " " " " " " " " "	30	85	210.0
Szuchiafang ...	"	Sulan, Kirin Prov.	20	69	114.0
Nen-an	"	Mutankiang Prov.	20	54	203.4
Tunkingcheng ..	"	" " " " " " " " " "	25	82	173.8
Acheng	"	Pinkiang Prov.	19	71	196.0
Wuchia	"	Prov.	20	60	212.0
Paichia	"	Lungcheng, Lungkiang Prov.	30	105	450.0
No-ho	"	Lungkiang	30	85	450.0
Total		23 villages	443	1,461	4,688.2

Table 6. CONDITION OF YOUTH VOLUNTEER TRAINING INSTITUTES
(Jan. 1940)

Kind:	No. of Institutes	No. of Companies	No. of Students	Student Capacity	Area (hectares)	
					Under crops	Scheduled
Large Scale Training Institutes	Peian (3)	37	10,206	30,000	8,127	15,000
	Sankiang (1)					
Special Training Institutes	Pinkiang (2)	6	1,939	15,980	126	—
	Fengtien (1)					
"B" class Small Scale Training Institutes	Mutankiang (2)	29	6,607	9,700	2,244	29,100
	Kirin (1)					
	Heiho (2)					
	Tungan (1)					
	Chentao (1)					
Hsingan N. (1)						

(Continued) Kind:	No. of Institutes	No. of Companies	No. of Students	Student Capacity	Area (hectares)	
					Under crops	Scheduled
"A" class Small Scale Training Institutes	Sankiang (1)	13	3,664	3,900	399	11,700
	Tungan (2)					
	Pinkiang (2)					
	Peian (5)					
	Mutankiang (2)					
Lungkiang (1)						
Mining Industry Training Institute	Kirin (1)	2	47	500	—	—
Railway Self-protective Training Institutes	Chinchow (1)	21	6,155	6,000	2,032	23,614
	Kirin (4)					
	Sankiang (4)					
	Peian (2)					
	Lungkiang (2)					
	Mutankiang (3)					
	Heiho (1)					
Hsingan E. (2)						
Total	49	104	29,034	61,366	13,023	82,114

Table 7. DISTRIBUTION OF CHOSENESE NEWLY IMPLANTED
(As in October, 1939)

(A) Group Settlers

Province:	No. of Groups	1937		1938		1939		Total	
		House hold	Popu- lation	House hold	Popu- lation	House hold	Popu- lation	House hold	Popu- lation
Chientao	71	2,280	11,840	1,824	9,364	1,074	5,752	5,178	26,956
Fengtien	5	—	—	—	—	358	1,939	359	1,939
Tunghua	13	—	—	604	3,020	345	1,387	949	4,407
Kirin	20	—	—	426	2,043	833	4,429	1,259	6,472
Mutankiang	9	—	—	—	—	911	5,124	911	5,124
Pinkiang	4	—	—	—	—	352	1,886	352	1,886
Lunkiang	1	—	—	—	—	51	292	51	392
Chinchow	4	194	1,111	—	—	131	732	329	1,843
Peian	20	—	—	—	—	600	1,600	600	1,600
Total	147	2,478	12,951	2,854	14,427	4,655	23,141	9,987	50,519

(B) Collective Settlers

Province:	1938		1939		1938		1939	
	House- holds	Popu- lation	House- holds	Popu- lation	House- holds	Popu- lation	House- holds	Popu- lation
Antung	95	378	28	98	—	—	—	—
Fengtien	960	3,285	327	1,135	—	—	—	—
Tunghua	—	—	160	725	153	618	—	—
Kirin	—	—	1,065	3,516	1,131	4,014	—	—

(Continued) Province:	1938		1939		Province:	1938		1939	
	House- holds	Popu- lation	House- holds	Popu- lation		House- holds	Popu- lation	House- holds	Popu- lation
Pinkiang	280	685	181	630	Jehol	11	32	38	86
Hsingan S.	38	86	5	21	Sankiang	15	25	24	107
Chientao	28	80	208	954	Peian	—	—	129	490
Lunkiang	23	62	37	127	Mutankiang	—	—	8	30
Chinchow	55	85	41	165	Total	2,730	8,959	2,310	8,479

(C) Free Settlers

Province:	1937		1938		1939		Total	
	House- holds	Popu- lation	House- holds	Popu- lation	House- holds	Popu- lation	House- holds	Popu- lation
Chientao	55	208	—	—	22	114	77	322
Chinchow	353	1,663	83	415	—	—	436	2,078
Tunghua	405	1,760	85	425	—	—	490	2,185
Fengtien	201	851	—	—	—	—	201	851
Kirin	285	1,120	13	65	235	1,108	533	2,293
Pinkiang	261	1,001	—	—	—	—	261	1,001
Lungkiang	12	34	—	—	—	—	12	34
Hsingan S.	102	402	—	—	—	—	102	402
Mutankiang	176	792	90	457	282	1,456	548	2,705
Sankiang	—	—	—	—	70	350	70	350
Total	1,850	7,831	271	1,362	609	3,028	2,730	12,221

Financial Conditions of Japanese Farmers

The above sections gave an account of Japanese settlers in Manchuria before the Manchurian Incident broke out. In directing our attention now to the living conditions of these Japanese settlers, we find the following figures released by the Industry Bureau of the South Manchuria Railway. According to investigations, which covered 14 farms in 1931, 36 in 1933, and 34 in 1934, the following individuals, family members engaged in farm work and employed hands, were engaged in agriculture.

Table 8. ANNUAL AGGREGATE NUMBER OF JAPANESE FARMERS AND EMPLOYED HANDS

1931		
(Average figures for 14 Households)		
Family members	251.1	8%
Permanent employed hands	1,811.7	67.4 "
Temporary employees	661.7	24.6 "
Total	2,688.5	100.0 "

Table 9. AVERAGE WORKING HOURS

1933					
(Average figures for 36 Households)					
	Men hrs.	Women hrs.	Others hrs.	Total hrs.	Percent- age %
Family members	3,019.1	337.5	427.8	3,784.4	18.22
Permanent hands	10,356.0	490.0	—	10,846.0	52.19
Temporary hands	4,173.6	1,974.8	—	6,148.4	29.59
Total	17,548.7	2,802.3	427.8	20,778.8	100.00

1934					
(Average figures for 34 Households)					
	Men hrs.	Women hrs.	Others hrs.	Total hrs.	Percent- age %
Family members	4,002.6	481.4	76.9	4,560.9	20.07
Permanent hands	12,222.6	568.4	—	12,791.0	56.29
Temporary hands	3,137.2	2,235.0	—	5,372.2	23.64
Total	19,362.4	12,284.8	76.9	22,724.1	100.00

From the above figures it can readily be seen that those Japanese farms in South Manchuria that were included in the investigation, relied a great deal upon employed hands to do farm work, since this latter group comprised from 80-90% of the farming population.

Inquiring into the dependence of Japanese farmers placed on markets, we find the following figures showing that the degree of reliance placed on markets is rather high.

Table 10. BUSINESS TRANSACTION OF JAPANESE FARMERS IN THE KWANTUNG LEASED TERRITORY AND THE SOUTH MANCHURIA RAILWAY ZONE

	1931 (14 households)	1933 (36 households)	1934 (34 households)
General Income	83.26%	74.96%	72.74%
Running Expenses	59.22 „	68.38 „	63.99 „
Home Finances	85.40 „	77.92 „	79.98 „

	1927 Average for 16 Families in Japan	Average for 15 Manchu Families in 1934
General Income	54.13%	47.47%
Running Expenses	22.06 „	51.40 „
Home Finances	59.15 „	37.67 „

Figures from Op. Cit.

Japanese farmers in Manchuria can be divided into the following groups according to the products raised.

- I. Those raising fruits or vegetables.
- II. Those raising fruits only.
- III. Those raising vegetables only.
- IV. Those raising general produce.

The income and expenditures for these groups are tabulated below.

Table 11. NET PROFITS* FROM AGRICULTURAL PRODUCTS

	Net Profits per Tan of land	Percentage of Profits to capital
Group I. (Average for 4 families) ...	¥ 45.74	17.19%
Group II. (Average for 3 families) ...	„ 37.87	5.73 „
Group III. (Average for 2 families) ...	„ 1.38	1.51 „
Group IV. (Average for 5 families) ...	„ 1.17	1.07 „
General Average	„ 15.75	6.69 „

* Expenses subtracted from Gross Income.

† One tan is equivalent to 0.245 acre.

Above figures from S.M.R. Economic Research Bureau, "Economic Report on Japanese Immigrant Farmers for 1935."

It is rather dangerous to generalize from the above figures which account for a small number of families, but as indicated in the results of the investigations, raising of general produce is the least profitable. In other words, it was found that the raising of crops like soya beans and kaoliang by Japanese immigrant farmers is very discouraging.

Conclusion. Immigration of Japanese farmers during the thirty years since Japan acquired a foothold in Manchuria up to the Manchurian Incident of 1931, made a rather poor showing. By 1931, there were less than 1,500 families with a total population of 3,600, and their activities were purely confined to the Kwantung Leased Territory and the South Manchuria Railway Zone. Under such a situation, it was obvious that the population problem in Japan had not been relieved in the least, and that immigration up to the Manchurian Incident was a total failure. The main reasons for this failure are:

1. Limitation of available land for incoming Japanese settlers due to the arrogant restrictive administration of the Northeastern

regime that made migration into the interior unsafe. Consequently, Japanese immigrants were forced within the narrow Railway Zone and the Kwantung Leased Territory.

2. Under these conditions, it was impossible for the Japanese Government to adopt definite plans to encourage immigration, and consequently, those scattered immigrants that went to Manchuria did so not with the intention of making a permanent settlement.

Establishment of Farm-Land Development System

The principles of the Farm-Land Development Plan are two: (1) the establishment of a solid, basic agricultural industry, sufficient to the needs of the country, now and for all time; and (2) the propagation of a secure and steady yeomanry as a vital factor in the social structure of the country. The essential value of these objects in the building of the Empire of Manchoukuo, and its incorporation into the greater object of a New Order in East Asia is elemental.

The first and essential step was the vesting of ownership of all agricultural land in the State, and its appropriation along fair and equitable lines to responsible individual landholders, with freedom of enterprise, yet under official guidance.

The basic provision of this distribution is the perpetuation of original ownership under the policy of perpetual freehold. This is designed to avoid the manipulation and accumulation of title, a condition contrary to the basic intent of the plan, which essentially implies resident ownership and exploitation. The objective is the establishment of permanent, productive farming communities under wholesome and progressive standards, collectively forming a solid agricultural backbone to the country.

Title may not be disposed of, nor the land diverted from its assigned purpose. Thus the security of the industry and its contribution to the commonwealth is assured.

In a public statement, Mr. Seitaro Yuki, Director of the Colonization Bureau, has clarified the principal provisions of the Farm-Land Colonization Plan as follows:

"The essential soundness and fairness of the Farm-Land Colonization Plan is obvious. It aims at the establishment of adequate farm-villages, management of agriculture along liberal lines, and

the protection of the rights of the farmer as well as the security of the State, on the principle that the farmer must cultivate his own land along approved lines.

"It is well known that one of the primary problems of rural communities in the various countries of Europe is the unequal distribution of land and the irrational system of tenancy, as a result of which the accomplishment of the ideal is impossible.

"Manchoukuo is blessed with vast agricultural resources, of which 36,750,000 acres have been brought under cultivation, with an additional area variously estimated at between 49,000,000 and 73,000,000 acres of potential agrarian land available. All agricultural land has been brought under State ownership, and in consequence fair and equitable appropriation has been possible. Due consideration has been given to the rights of farmers operating prior to the inauguration of the plan. As a result, Manchoukuo has been able to proceed, free of conventional fetters, in setting up an ideal agricultural estate.

"The factor of security is fundamental in this plan. The principle of perpetual interdependency between the farmer and his land, made hereditary, assures the consolidation of agricultural resources and a sturdy yeomanry, an important foundation to national society.

"Coming to concrete provisions for development of farm-lands, the Government has provided for careful and adequate guidance and supervision. Officials of the State Colonization Board are not eligible for ownership, eliminating any possibility of manipulation. Strict and specific regulations for the transfer of land are laid down. Instances of falling off of productiveness and other difficulties will be dealt with as they arise, on their individual merits.

"While under this fair and practical system little difficulty is anticipated, the laws have been provided with teeth, and any wanton and deliberate offence will be severely dealt with, such as manipulation of land prices or prices of agricultural products.

"The fundamentals of the plan, as outlined above, are simple and direct, yet there are some cases of gross misunderstanding and mis-interpretation, and the Manchoukuo plan is sometimes quite erroneously confused with the system of collective farms under State management of Soviet Russia. Then there are those who

protest the system as restraining individual rights and private ownership.

"Despite such misunderstandings and deliberate distortions, the inherent fairness of the plan has won general respect and commendation, and the Government looks forward to the consummation of a happy and prosperous agricultural state through the harmonious cooperation of the various factors."

CHAPTER XV AGRICULTURE

The economy of Manchoukuo is still based on agriculture, despite the striking progress of industries. The population of the country, which now reaches nearly 40,000,000 is agricultural to the extent of 80 per cent., and about 70 per cent. of the country's total exports are agricultural products. The arable area of Manchoukuo is larger than that of Canada or Argentina and is next only to that of the United States, British India, the Soviet Union and China. Of the cultivable area amounting to some 41,000,000 hectares, about 17,000,000 hectares or approximately 48% of this area has so far been brought under cultivation, the remainder being still untouched.

Table 1. UTILIZATION OF LAND AND FARMING POPULATION

			(1937)	
(A) Land Utilization			(B) Farming Population	
	(1,000 hectares)	%	(1,000)	%
Arable Land	41,158	31.5	*Farming Population	25,667 88.7
Cultivated	16,796	12.9	*Farming Households	4,008 85.2
Not yet Cultivated	24,362	18.6		
Unarable Land	89,156	68.5		
Forest Zone	31,422	24.1		
Others	58,000	44.4		
Grand Total	130,314	100.0		

Note: * Statistics are for 1934 and percentages are against the total population and total households of Manchoukuo.

With respect to the distribution of agricultural area, South Manchuria, with the exception of the upper reaches of the rivers and the parts adjacent to Mongolia is fairly well cultivated and penetrated, particularly the rich Liao Valley. Central Manchuria, watered by the Hurka River and the upper and middle reaches of the Sungari River is probably the best agricultural region of Manchuria but so far only half of this arable land has been brought under cultivation. North Manchuria, the fertile valley plains drained by the lower Sungari and the Nonni and the Amur Rivers,

is generally rich in soil and largely virgin, but is only cultivated to the extent of one-third of its potential possibilities.

Agriculture in Manchuria was originally started by Chinese settlers who came from Shantung and Chihli, and was first developed in the basin of the Liao River. The Sungari River basin was brought under cultivation at a much later date. The eastern part of Manchuria, adjacent to Korea, was developed by Korean settlers, and especially rice cultivation in that region has been since carried on for the greater part by Koreans.

Dry farming is the outstanding feature of Manchurian agriculture. This method has been mastered by the rural populace through several hundred years of experience. At present there are districts where crops are planted in rotation and domestic animals are used for cultivation. When the cultivation of improved agricultural products and the employment of advanced farming technique become widely diffused among the farming population along with the development of uncultivated lands and the increase of crops, it is expected that Manchoukuo will be able to increase its present production considerably.

Table 2. FARMING LAND AND POPULATION
(Unit: 1,000 hectares)

Name of Province	*Farming Population		Unarable land		Arable land		Cultivated land		Not yet cultivated	
	(1,000)	% to total pop.	% to total	% to total	% to total	% to total	% to arable land	% to arable land	% to arable land	% to arable land
Kirin	3,525	85.9	4,512	50.2	4,479	49.8	3,040	67.9	1,440	33.1
Lungkiang	1,078	85.6	4,248	89.9	8,316	66.2	2,101	25.3	6,215	74.7
Heiho	31	61.6	9,876	89.9	1,106	10.1	54	4.9	1,051	95.1
Sankiang	734	78.2	5,477	50.9	5,277	49.1	752	14.3	4,525	85.7
Pinkiang	3,428	88.8	7,857	54.8	6,485	45.2	3,530	54.4	2,956	45.6
Mutankiang										
Chientao	401	70.2	2,522	85.8	417	14.2	166	39.7	251	60.3
Antung	2,246	86.5	4,246	88.0	577	12.0	418	72.5	159	27.5
Tunghwa										
Fengtien	7,103	80.4	4,817	56.3	3,737	43.7	2,919	78.1	818	21.9
Chinchow	2,796	88.8	2,681	67.9	1,265	32.1	1,154	91.2	111	8.8
Jehol	2,286	91.4	8,640	89.4	1,019	10.6	782	76.8	237	23.2
Harbin Sp. City	25	90.7	36	38.8	57	61.2	45	79.3	12	20.7
Total	25,667	84.7	54,912	62.7	32,736	37.3	14,960	45.7	17,775	54.3

Note: * Indicates population in 1934. Area as in 1937. † (excl. Hsingan Provinces)

(Continued)

(B) Four Hsingan Provinces

	Agricultural area		Pastoral area		Agri.-Pastoral area		Forestry zone		Waste land		Total
	% to total	% to total	% to total	% to total	% to total	% to total	% to total	% to total			
Eastern Hsingan	365	3.5	913	8.5	548	5.2	4,924	45.9	3,924	36.7	10,675
Southern	760	9.6	1,520	19.3	2,165	27.5	950	12.0	2,507	31.6	7,902
Western	715	8.8	1,789	22.2	1,074	13.3	109	1.4	4,352	54.0	8,041
Northern	1,633	10.0	4,896	30.6	1,632	10.2	4,924	30.6	2,955	18.4	16,039
Total	3,472	8.1	9,116	21.4	4,774	12.2	10,908	25.5	13,739	32.3	42,657

Table 3. FIRST CROP FORECAST, 1940

(As released on Aug. 1, 1940)

	Area under Crops (hectares)	Output (m. tons)	Increase over 1939 (m. tons)
Soya Beans	3,826,177	4,386,429	441,177
Other Beans	530,719	420,223	77,156
Kaoliang	4,119,361	5,365,977	756,174
Millet	3,905,974	4,259,566	740,395
Maize	2,281,367	3,406,586	946,562
Wheat	1,019,020	877,865	-67,966
Paddy Rice	326,538	826,226	132,038
Upland Rice	96,768	116,317	20,981
Other Cereals	1,746,853	1,489,252	197,124
Hemp Seeds	108,870	80,377	28,921
Perilla Seeds	75,734	47,355	-18,044

Agricultural Products. Some forty different kinds of agricultural products are cultivated in Manchuria and their geographic distribution is clearly marked by natural factors. The principal products are beans, kaoliang, millet, maize, wheat, raw cotton, fruit and paddy rice. Beans are produced in Kirin, Pinkiang, Lungkiang, Sankiang, Fengtien and Antung Provinces; kaoliang is widely cultivated but most extensively in Fengtien and Kirin Provinces, while millet is grown in almost all parts of the country under cultivation, with the exception of Jehol Province. Maize is cultivated on farm lands in Pinkiang, Fengtien and Antung Provinces, wheat in North Manchuria centering on Pinkiang, Sankiang and Lungkiang Provinces, and raw cotton in the southeastern part of the country centering on Liaochung and Haicheng, and in various "hsien" (prefectures) centering on Taonan. Fruit is grown in districts along the S.M.R. main line south of Mukden, and in the Kwantung Territory, while paddy rice is cultivated in

Chientao Province, districts along the Mutan, Sungari, Hun and Liao rivers and along the Antung-Mukden Railway. Besides these crops, barley, oats, buckwheat, "hiye", barn-yard grass, flax, perilla seeds and upland rice are cultivated chiefly in North Manchuria.

Manchoukuo Government's Basic Policy for Agricultural Development

On April 21, 1936 the Manchoukuo Government announced a fundamental policy for the exploitation of the country's inexhaustible agricultural resources. The policy is the outcome of lengthy and careful consultation among the Department of Industry, the Interior and Mongolia Administration which have been in close association with the commercial and industrial possibilities of the State.

The policy is designed to improve the existing out-of-date and primitive methods of agriculture along modern lines and to multiply the output of soya beans, kaoliang, cotton and other staple farm products. It also provides for extensive reforms and renovations in credit and other public facilities for the farming population, including inter alia, the erection in various localities of farm warehouses. Many elaborate and concrete programmes are also laid down in regard to the policy for the general improvement of farming methods, which, it is stated, will be enforced one by one.

The utmost importance is attached to the announced policy, in view of the fact that Manchuria fundamentally is a land of agriculture, over 80 per cent. of its population being represented by farmers. It is believed that the enforcement of the policy will reshape the country so far as its agriculture is concerned. The following are the chief programmes put forward by the Government, which relate to the country's staple farm products:

- 1) Soya-beans: The growing of soya-beans should be properly controlled according to their actual demand both at home and abroad. For the time being, efforts should be directed towards the improvements of the methods for soya-bean cultivation and quality of the crop, while trying to lower its production cost and commercialize the bean as a commodity.

- 2) Kaoliang, millet and maize: The output of kaoliang, millet and maize should be increased by considering the growing demand for them as foodstuffs arising from a steady increase in the national population, their use as fodder in Japan and also the domestic consumption of these products as industrial materials.
- 3) Wheat: Particular efforts should be exerted to improve and encourage wheat cultivation in North Manchuria. The total future wheat acreage should be increased to 2,300,000 Japanese cho (5,635,000 acres) and the total output of the crop to 20,000,000 Japanese koku (99,200,000 bushels).
- 4) Cotton: The total cotton acreage should be increased to 300,000 cho (735,000 acres) and the annual output of cotton of 150,000,000 kin (198,000,000 pounds).
- 5) Wild silk: Better silk worms should be distributed among the farmers while trying to improve the existing methods of raising them. The annual output of silk cocoons should be raised to 30,000,000.
- 6) Sugar beets: The total acreage under sugar beets in North Manchuria alone should be increased to 12,500 cho (30,625 acres) and the total yearly output of sugar beets to 500,000,000 lbs. so that 700,000 piculs of sugar may be produced to place the country on a self-sufficing basis as far as sugar production is concerned.
- 7) Plants for production of fabrics: Cultivation of kenafe particularly in South Manchuria should be encouraged with a view to increasing the total acreage of land for its growing and its annual output to 18,000 hectares and 18,500 metric tons respectively. The total acreage of farms for hemp growing also should be raised to 200,000 cho (490,000 acres). The output of other kinds of hemp for fabric manufacture is to be increased to suffice the domestic demand.
- 8) Perilla, peanut, sesame, etc.: Cultivation of these crops as materials for oil extraction should be encouraged and at the same time, efforts should be made to improve the methods of their growing.
- 9) Hop: In view of a brisk demand for hop in Japan, the

total acreage of land under hop is to be raised to 30,000 hectares.

- 10) Fruits: Fruit growing particularly in South Manchuria, Chinchow and Jehol should be encouraged as a lucrative subsidiary occupation for the farmers.
- 11) Vegetables: Special efforts should be exerted to improve the quality of vegetables. At the same time competent storage facilities should be established to facilitate their distribution.

The erection of farm warehouses in the farming districts is also provided for in the policy. These warehouses are designed not only to store farm products but also to function as credit organs for the farmers in need of funds. It is explained that any farmer will be able easily to borrow money at low rates of interest on the security of his products stored in the warehouses. This method, it is believed, will go a long way towards relieving the farming population from the depression.

The creation of agricultural meteorological observatories in important districts and "model" villages and despatch of agricultural experts to various parts of the country to give counsel to the farmers are also stipulated in the policy.

New State-owned Experimental Farms Planned

In connection with the fundamental policy for agricultural development enumerated above, the Department of Industry of Manchoukuo announced its decision to establish many more State-owned experimental farm stations throughout the whole country. The officials of the Department of Industry declared in this connection that the necessity had been brought home to them of creating State-owned experimental farm stations in various districts to help improve farming methods and the quality of farm produce. According to the announcement, the country will be divided into 18 farm districts for the sake of convenience, in each of which one State-owned farm station is to be created.

Another novel plan to introduce the use of windmills into Manchoukuo for irrigation purposes has also been revealed by the Department of Industry. In view of the fact that there are many agrarian districts where competent irrigation facilities are lack-

ing, the Department's experts, after a careful study, have determined that the use of windmills as in Holland is most advisable and profitable.

It is believed that the use of the windmill will be a great blessing to the farmers particularly those who are engaged in live-stock raising in the districts lacking constant sources of water supply, because subterranean water will be made available through the use of the windmill.

Farm Improvement Embodied in Five-year Industrial Development Plan

As one of the principal projects contained in the five-year industrial development plan, which was formally put into operation on January 1, 1937, the Department of Industry has announced a comprehensive programme for the improvement of agriculture and live-stock farming throughout the country. Under this programme an important reform in farm administration is planned. Efforts will be made by the Department especially to facilitate the organization of farmers' guilds in all agrarian districts. The creation of many model farm villages, as mentioned in the programme announced in 1936, is provided for.

Regarding the improvement of agriculture, attention is to be paid by the Department to the question of increasing the country's output especially of wheat, rice, rye, maize and hemp through the introduction of better seeds and a substantial expansion of areas under cultivation.

A new experimental farm is to be established in Harbin while those already maintained at Koshan and Chiamussu will be enlarged. As regards live-stock farming, officials will be despatched to the United States and Australia to purchase 1,000 heads of Merino and Corriedale sheep.

Further, another sheep-breeding farm under State management is to be newly opened in addition to four already in operation. Improvement of facilities for the prevention of animal epidemics is also on the tapis with an animal epidemic prevention law scheduled to be promulgated shortly.

Table 4. AREA UNDER VARIOUS CROPS

(In 1,000 hectares)

	Soya		Kaoliang	Millet	Maize	Wheat	Rice	Upland		Total
	Beans	Other Beans						rice	cereals	
1924	2,179	184	2,212	1,564	880	746	7	80	522	8,323
1925	2,691	303	2,532	1,902	1,107	881	94	111	694	10,314
1926	3,349	438	2,401	1,926	1,177	896	111	120	777	11,196
1927	3,559	448	2,674	2,115	1,083	1,139	126	117	813	12,070
1928	3,760	474	2,916	2,184	1,068	1,317	83	101	1,169	13,072
1929	4,017	401	2,988	2,148	937	1,299	89	112	1,051	13,042
1930	4,153	407	3,056	2,227	957	1,382	99	109	1,096	13,486
1931	4,235	367	3,004	2,351	1,086	1,588	83	119	1,242	14,315
1932	4,144	375	2,710	2,272	1,112	1,488	67	107	1,212	13,486
1933	3,879	301	2,661	2,157	980	1,395	63	105	1,124	12,665
1934	3,273	322	2,706	2,170	1,123	826	101	102	1,273	11,897
1935	3,303	347	2,855	2,458	1,254	993	121	114	977	12,422
1936	3,468	379	2,994	2,555	1,313	1,094	175	114	983	13,076
1937	3,591	376	3,046	2,613	1,419	1,216	211	105	1,037	13,613
1938	3,869	397	3,224	2,935	1,534	1,288	258	101	1,071	14,679
1939	4,157	522	3,929	3,690	2,007	1,282	286	104	1,705	17,680

Note: Statistics from 1934 are the investigation of the Dept. of Industry.

Table 5. OUTPUT OF PRINCIPAL CROPS

(In 1,000 Metric tons)

	Soya		Kaoliang	Millet	Maize	Wheat	Rice	Upland		Total
	Beans	Other Beans						rice	cereals	
1924	3,455	256	4,477	3,042	1,694	806	95	88	760	14,072
1925	4,188	334	4,710	3,137	1,888	962	193	150	891	16,453
1926	4,790	523	4,550	2,982	1,774	969	181	134	829	16,731
1927	4,835	580	4,605	3,226	1,803	1,446	149	147	1,018	17,810
1928	4,852	622	4,643	3,290	1,853	1,471	151	145	1,271	18,298
1929	4,865	550	4,712	3,374	1,733	1,303	138	157	1,601	18,434
1930	5,318	519	4,818	3,304	1,719	1,538	156	158	1,730	19,080
1931	5,245	462	4,533	2,983	1,833	1,582	161	163	1,862	18,829
1932	4,288	456	3,757	2,635	1,687	1,134	112	138	1,561	15,764
1933	4,601	304	4,022	3,184	1,759	651	166	143	1,804	16,847
1934	3,398	277	3,470	2,123	1,503	643	200	126	1,046	12,787
1935	3,859	327	4,103	2,968	1,903	1,015	296	147	1,106	15,725
1936	4,147	341	4,241	3,187	2,072	959	442	155	1,093	16,638
1937	3,832	298	3,673	2,945	2,082	903	527	111	965	15,480
1938	4,091	342	4,642	3,518	2,476	964	712	101	1,370	18,328
1939	3,956	344	4,619	3,527	2,464	949	696	95	1,294	17,943
Of which:										
Hsinking	7	—	7	4	1	—	—	—	1	19
Kirin	971	72	780	637	432	73	155	31	242	3,392
Lungkiang	358	26	307	367	265	82	5	—	132	541

(Continued)	Soya Beans	Other Beans	Kaoliang	Millet	Maize	Wheat	Rice	Upland rice	Other cereals	Total incl. others
Peian	545	13	198	409	224	339	45	—	115	1,867
Heiho	4	—	—	2	3	8	1	—	9	28
Sankiang	218	5	88	111	137	109	31	—	17	716
Tungan	62	3	21	22	24	14	35	—	7	188
Mutankiang	50	2	5	24	24	28	50	—	3	186
Pinkiang	675	40	594	611	486	23	77	7	144	2,856
Chientao	91	6	8	53	30	1	63	—	22	275
Tunghua	71	7	52	24	92	7	37	2	10	301
Antung	60	12	41	22	189	6	56	4	28	412
Fengtien	539	68	1,260	372	358	35	130	48	128	2,939
Chinchow	117	34	662	220	101	7	20	3	60	1,223
Jehol	78	30	297	390	22	4	3	1	135	960
Hsingan W.	13	6	78	41	8	6	1	—	92	288
" S.	72	20	219	157	49	—	4	—	117	637
" E.	25	1	4	17	21	6	2	—	26	102
" N.	—	—	—	—	—	8	—	—	7	15
Total	3,956	344	4,619	3,527	2,464	949	696	95	1,294	17,943

Soya Beans

This crop is to Manchuria what raw silk is to Japan. Approximately one-fifth of all cultivated land in Manchuria is used in raising soya beans. The annual yield amounts to 4,000,000 m. tons and accounts for about 60% of the world's total soya bean production. Sales of soya beans abroad amounts to 300,000,000 yuan or over half the total export of the country. This crop is raised throughout the country but the South Manchurian beans are better in quality although North Manchuria leads in quantity of production. There are more than 200 varieties of Manchurian soya beans ordinarily designated by the general distinction of yellow, blue and black, of which the first is most popular. The bulk of the soya bean is exported to foreign markets, principally to Japan, China and Europe and are generally used for extracting oil, while the bean cakes are used as fertilizer and fodder.

When the available area for this crop is fully under cultivation, the output is expected to rise to 8,000,000 tons. The international importance of the soya bean is due not merely to its use as foodstuffs or for its oil, but also their value as material for albumen and artificial wool industries. The present condition of the bean industry, particularly of the albumen branch, and the

progress of the artificial wool industry using bean casein as material are sufficient indications in this direction.

Soya bean cakes, after complete removal of water, contain 50 per cent. albumen, which being similar to casein, is valuable as a casein substitute. It was first used as an aqueous paint for internal decoration. Non-inflammable celluloid made from casein, through the action of formalin, is widely used as material for buttons, combs, parasol handles and telephone apparatus, besides supplying the material for making window frames, etc. of automobiles.

Kaoliang

Kaoliang is the staple food of the natives with an annual yield of 4,600,000 metric tons. The seeds are used for food, animal feed, brewing and as raw material for dextrin. Unlike soya beans, kaoliang is almost entirely consumed as the daily foodstuff of the people and therefore its demand is not influenced by conditions in foreign countries as in the case of soya beans. Kaoliang is cultivated in all parts of the country because it has a very strong resistance power to alkaline soil besides being deep rooted. It withstands dryness. The southern part of Fengtien Province and Chinchow Province are the chief producers of this crop. The stalks are indispensable to the farmers because they are used as fuel and also for thatching the roofs and making the walls of their houses. The stalks are cut open and their outer skin removed to make matting. There is also a possibility in using the kaoliang stalks in the pulp industry. The principle centers of kaoliang trade are Hsinking, Kaiyuan, Fanchiatun, Ssuping kai, Kungchuling, Kuochiatien, and Liaoyang.

Maize. Maize is an important foodstuff in Manchoukuo. In South Manchuria it is generally milled for food while in North Manchuria it is used as materials for alcoholic beverages. The stalks are used as fuel while the leaves are used for animal feed. Only a small quantity is produced in North Manchuria.

Upland Rice. Upland rice is the type of rice raised on dry farms and is used primarily as food by the Manchoukuoans. The quality is poor but it grows rapidly and suits the climate of Manchoukuo. The cultivated area is about 104,000 hectares and its annual production amounts to 95,000 metric tons.

Paddy Rice. Field rice cultivation was introduced throughout the country. At the present time, 286,000 hectares of land is being used as paddy rice fields from which 696,000 m. tons of rice are produced.

Millet. Millet constitutes one of the three principal crops in Manchoukuo, the others being soya beans and kaoliang. Approximately 3,500,000 of this crop is raised from 3,690,000 hectares. It is not only consumed as food but is also used for brewing purposes. Since it is one of the main foodstuffs of the Manchoukuoans its production is steadily increasing. Millet is very adapted to the Manchoukuo climate and stands dryness in addition to possessing strong resistance to alkaline soil. A comparatively small quantity of millet is exported to Korea where the natives sell the rice they produce at high prices and buy as their food Manchurian millet which is cheaper and more suitable to their taste than rice.

Castor. Approximately 20,000 metric tons is raised annually from an area of 90,000 chobu of land. The beans are utilized for the manufacture of castor oil, and lubrication oil for medical purposes.

Flax. Flax cultivation is rather new to the country and therefore only 10,000 chobu are used for this purpose. North Manchoukuo is most suitable for this crop and it is believed that this section of the country will become one of the world's leading flax producing centers since the tensile strength of flax thread is the greatest among the threads produced from plant material. The demand for flax seed for the production of linseed oil is also great. Particularly, the development of flax raising industry has made remarkable strides in recent years with the realization of the importance of this crop for the spinning industry.

Peanut

Epochal progress has been made of late in the growing of peanuts in Manchuria, particularly in the Kwantung Leased Territory. This is largely responsible for the fact that peanut cultivation requires no fertilizer and yet is quite profitable. As a matter of fact, the peanut has come to rank among the principal items of Manchurian farm produce for exportation. For instance, more than 80 per cent. of the output in the Kwantung Leased

Territory is shipped abroad. In order to ensure the smooth progress of peanut exports, peanut growers' associations were created at Pulantien and Pitzuwo in the Territory in 1929 which are designed to conduct strict examinations of peanut exports on the one hand and, on the other, to function as a credit organ of the growers themselves. Since 1930, the Government of the Kwantung Leased Territory has been subsidizing these associations. It is believed that peanut cultivation will grow more popular in Manchuria in the near future.

Sugar-beet

The first cultivation of sugar-beets for manufacturing purposes which was started by Manchurian farmers near Suchiatun, Shenyang prefecture, met with good results, thus giving the possibility of adding another product to native husbandry with the hope that it might become in future an important item in the list of Manchurian crops.

Though the experimental cultivation of sugar-beets, which was started in 1914 by the S.M.R. Agricultural Station at Kungchuling, proved that the percentage of sugar content in local beets and also the production area in the country were promising for manufacturing purposes, much difficulty has been experienced in persuading the Manchurian farmers to see the commercial value of sugar-beets.

In 1936 the Manchurian Sugar Refining Company Ltd. (Man-shu Seito) successors to the South Manchuria Sugar Manufacturing Company, succeeded in interesting the farmers and in encouraging sugar-beet production in 47 villages near Suchiatun, around which 463 hectares of beets were cultivated in the spring of 1936.

The total crop amounted to about 5,000,000 kin or about 10,000 kin per hectare, to the great satisfaction of both the promoters and cultivators. Shipments of sugar-beets to the company's plant, which started its operation in November, began in the middle of December, and the movement of beets to the Suchiatun station was active, amounting to about 220,000 kin per day.

Vegetables

Generally speaking, vegetables are grown in Manchuria primarily to be consumed by the farmers themselves. Under the cir-

cumstances, they are marketed as commodities only in densely populated cities and towns along the railways. Among the principal vegetables produced in Manchuria are: mad-apple; rapes; leek; garlic; yam; potato; sweet potato; pumpkin; water-melon; cucumber; musk-melon; green peas; red beans; onions; turnip; spinach; burdock; pepper.

Vegetables are grown on usual farms and specially built gardens, the latter being drained or irrigated. Mad-apple, onion, turnip, burdock, rape, potato, pepper, pumpkin and musk-melon are the principal ones grown on usual farms, while irrigated vegetable gardens are generally confined to the growing of water-burdock, garlic, cucumber, beans and yam. Drained gardens are used chiefly for the raising of mad-apple, white-rape, garlic, pepper, pumpkin and spinach.

Apples

The cultivation of apples has made rapid progress in a short period of time. In 1916-17, the area devoted to this purpose was no more than several hundred acres, but the orchard area increased to 4,800 acres in 1927 and to 14,000 acres in 1936. The climate of Manchuria is well suited to apples, and the cultivation is economically profitable. The cultivation is, however, limited to the areas south of Anshan. The output in Kwantung Territory is three or four times that for all Manchoukuo. The value of apple output in 1935 was ¥1,569,700. Imports amounted to ¥612,000.

Table 6. PRINCIPAL INDUSTRIAL CROPS

(Unit: In metric tons)

	Cotton	Tobacco		Jute	Hemp for	
		Native	Improved		Fibre	Seed
1935	36,875	17,268	3,997	—	10,374	—
1936	—	—	—	—	—	—
1937	63,901	3,577	—	—	8,976	—
1938	51,354	11,496	5,797	10,937	12,396	30,045
1939	68,840	17,062	14,247	11,818	14,606	51,520
1939:						
Hsinking	—	—	—	2	1	2
Kirin	—	7,934	241	1,575	3,187	5,925
Lungkiang	—	197	—	481	854	4,903

(Continued)

	Cotton	Tobacco		Jute	Hemp for	
		Native	Improved		Fibre	Seed
Peian	—	947	2	112	2,055	11,578
Heiho	—	8	—	—	16	—
Sankiang	—	285	81	226	461	142
Tungan	—	43	20	55	226	3
Mutankiang	—	195	—	17	54	—
Pinkiang	—	1,889	—	326	2,054	18,269
Chientao	—	665	796	56	236	26
Tunghua	2	553	39	23	901	51
Antung	37	263	3,528	263	624	31
Fengtien	38,719	1,357	7,752	6,203	2,424	1,636
Chinchow	27,819	394	1,510	988	159	316
Jehol	2,257	1,606	264	188	1,112	3,762
Hsingan W.	—	447	—	78	941	1,016
" S.	5	257	14	999	236	3,814
" E.	—	22	—	18	65	48
" N.	—	—	—	—	—	—
Total	68,840	17,062	14,247	11,818	14,606	51,520

(Continued)

	Flax	Perilla seeds	Castor seeds	Sesamum	Beet
1935	5,801	207,935	17,070	14,997	—
1936	—	—	—	—	—
1937	—	—	—	—	—
1938	29,056	111,337	9,637	9,125	183,586
1939	48,657	65,402	25,021	20,261	241,841
1939:					
Hsinking	11	4	—	—	749
Kirin	1,930	5,509	851	1,034	63,766
Lungkiang	387	12,821	1,083	1,490	—
Peian	18,786	31,125	24	188	8,494
Heiho	—	—	—	—	—
Sankiang	1,513	388	60	65	—
Tungan	72	106	5	2	6
Mutankiang	7,530	37	—	15	—
Pinkiang	17,177	10,076	151	2,399	117,168
Chientao	1,169	142	—	40	—
Tunghua	62	951	11	109	54
Antung	4	39	13	82	—
Fengtien	—	2,726	5,546	5,831	51,175
Chinchow	—	417	4,880	6,131	—
Jehol	—	750	1,057	355	—
Hsingan W.	—	16	608	399	—
" S.	16	245	10,732	2,123	429
" E.	—	50	—	—	—
" N.	—	—	—	—	—
Total	48,657	65,402	25,021	20,261	241,841

(Continued)

	Potatoes	Fruits	Vegetables	Lucerne
1935	—	—	—	—
1936	—	—	—	—
1937	—	—	—	—
1938	1,384,442	671	381,433	4,510
1939	1,753,725	814	694,689	5,100
1939:				
Hsinking	2,347	—	4,307	—
Kirin	329,130	—	312,526	2,305
Lungkiang	137,185	—	—	—
Peian	299,851	—	—	—
Heiho	3,607	—	4,307	—
Sankiang	81,369	—	—	—
Tungan	17,752	—	—	—
Mutankiang	19,185	—	—	—
Pinkiang	323,043	—	—	—
Chientao	142,665	738	17,615	190
Tunghua	29,912	—	25,703	975
Antung	56,318	—	—	—
Fengtien	127,599	33	299,362	1,249
Chinchow	15,137	—	—	—
Jehol	109,395	—	—	118
Hsingan W.	16,191	—	14,766	203
" S.	12,727	43	7,731	30
" E.	29,330	—	7,039	—
" N.	982	—	1,333	—
Total	1,753,725	814	694,689	5,100

Table 7. STATISTIC OF COTTON PLANTATION

(A) Area

Area & Crop of Cotton

	Area (Hectares)			Total
	Native cotton	Imported cotton	Improved cotton	
1934	69,267	23,543	58	92,868
1935	43,063	13,692	216	56,971
1936	53,462	27,928	1,020	82,410
1937	57,099	39,209	4,815	101,124
Of which:				
Fengtien Province	25,417	25,578	1,993	52,988
Chinchow	31,306	10,613	2,754	44,672
Jehol	348	3,012	68	3,430
Antung	28	6	—	34

(B) Crop

Output of Raw Cotton

(Continued)

(Metric tons)

	Native cotton	Imported cotton	Improved cotton	Total	Computed in ginned cotton
1934	59,595	23,664	47	83,306	22,724
1935	27,014	10,881	215	38,110	10,417
1936	36,618	19,704	1,066	57,389	16,019
1937	37,702	26,577	4,096	68,375	19,673
Of which:					
Fengtien Province	17,362	17,451	—	18	10,750
Chinchow "	20,119	7,163	57	2,221	8,196
Jehol "	203	1,960	2,244	29,526	723
Antung "	16	3	1,796	36,609	5

Hemp (Tama)

The tissues of hemp which are commonly called Tama in Manchuria are used principally for manufacture of nets, ropes, cloth and last but not least, paper. Its seeds, or Siaomatzu, are used mainly as material for oil extraction. The Tama intended for textile manufacture is grown notably in Fengtien Province and the mountainous district in the eastern part of Kirin Province and that for oil extraction in the Tungshan district, Fengtien Province, the region west of the Liao river and the districts along the Itung and Lalin rivers, Kirin Province.

The Manchurian farmer makes it a rule to plant one or two rows of Tama on the boundaries of his farms for the purpose of marketing its tissues as a remunerative secondary occupation. The output of Tama per Japanese tan (0.245 acre) is about 8 Japanese kamme (1 kamme is 8.28 lbs.). The total cultivation area in Manchuria is estimated at 20,000 Japanese cho (1 cho is 2.45 acres) and the yearly output of the plant at 16 million lbs., although any authentic figures are not available in the connection. There are several kinds of Tama now grown in Manchoukuo.

Blue Hemp (Tsingma)

Tsingma is grown almost everywhere in Manchuria, particularly in low, humid districts along rivers. So far as Tsingma cultivation is concerned, the regions along the Liao, Lalin and Nun-

kiang rivers are widely known. The total area under cultivation is put at 25,000 cho and the yearly output of the plant at 25 million lbs. Particularly, the district in the vicinity of Liaoyang, Chinchow and Newchwang are best suited for Tsingma cultivation, where the plant usually grows to a length of from 7 to 10 feet.

Like Tama, Tsingma is used primarily for manufacture of nets, ropes and cloth. Of late, it has begun to be used as a substitute for ramie which is imported to Manchoukuo in large quantities for manufacture of gunny bags. The output per Japanese tan (0.245 acre) of dried Tsingma issues averages 16 kamme (1 kamme is 8.28 lbs.) There are two kinds of the plant grown in the country.

Kunma

Kunma is a kind of hemp indigenous to Manchurian soil, which is grown for oil extraction. In some parts of the country, it is called Tamatzu. A full-grown Kunma plant measures only 2 feet or so. Liaoyang, Tungliao, Taonan and Changwu are the principal producing centres of Kunma. From Kunma is extracted Kunma oil which is used for industrial purposes. The output of this oil per Japanese tan averages 5 Japanese sho (1 sho 0.48 gallon).

Perilla-seed

Perilla is grown everywhere in Manchuria, although its output is relatively negligible. Particularly, the region north of Mukden is well adapted to the cultivation of perilla. Following the sharp drops that have occurred in the price of soya beans, there are growing signs in evidence of perilla being cultivated on a much larger scale in the near future. The plant usually measures 3 feet. The oil extracted from it is used for medical, lighting and industrial purposes. Perilla is usually planted on the boundaries of farms as a means of protection for staple farm crops.

Tobacco

The southern and eastern sections of Kirin province form the main tobacco producing territory of Manchuria. In the northern and eastern parts of Fengtien Province it is also planted on a fairly large scale. Kirin Province leads in production followed

by Fengtien Province. Generally speaking, the quality of tobacco produced in Manchuria is not good but of late it has been proved by the experiments conducted by the South Manchuria Railway Co. at Fenghuangcheng and Tehlissu that the cultivation in Manchuria of yellow tobacco of the American origin is quite promising and profitable.

To meet the tobacco shortage caused by restriction in leaf tobacco imports in accordance with the revised Customs tariff in effect since January 1938, the Manchoukuo Government plans to increase its tobacco land by 43,000 hectares in Antung, Fengtien, Chinchow, Jehol, Kirin, Chientao, Pinkiang and Mutankiang provinces, which are suitable for tobacco cultivation.

In line with the plan for increasing the crop, the Government was planning to increase its leaf tobacco import from Japan to some 2 million yuan in 1938 from about 800,000 yuan annually in the past, upon which negotiation were under way between the Finance Department of Japan and the Department of Finance and Commerce of Manchoukuo. In 1939 leaf tobacco imports from Japan proper amounted to 2,285,000 kilograms valued at 2,045,000 yuan.

Sericulture

First introduced into Manchuria some 200 years ago from Shantung Province, sericulture is now carried on quite extensively in the mountainous regions of the Liaotung Peninsula as a subsidiary occupation of Manchurian farmers. Wild silk is mainly produced in Antung, Kaiping, Haicheng, Hsiuyen, Fengcheng, Chuangho, Kwantien, Hsifeng and Huanjen-hsien. Wild silkworms were formerly raised on oak, "nara" (*Quercus glandulifera*) and (*glandulifera*) and "kunugi" (*Quercus serrata*) trees in the past, but in recent years it has been found that they also thrive well on "akayanagi" trees.

Production of wild silk cocoons amounted to 566,693 kilograms in 1936 and 671,529 kilograms in 1937. In Manchuria silkworms are raised twice a year, in spring and autumn, but the cocoons produced in autumn are superior and are used chiefly for reeling silk. Silk thread has hitherto been exported to Japan for making pongee. The production of mixed cloth wove with wild silk and Japanese raw silk for making western and Japanese clothing is anticipated in the future.

Wheat

Since the soil of North Manchuria is generally humus in nature, fertile and damp, this region is quite suitable for wheat raising as far as physical and chemical factors are concerned. An analysis of North Manchurian soil is given in the following table.

Table 8. TWENTY-FIVE-YEAR EXPANSION PLAN FOR WHEAT PRODUCTION

	Area under wheat (Hectares)	Production (Metric tons)		Area under wheat (Hectares)	Production (Metric tons)
1933	1,222,200	1,210,895	1937	1,348,000	1,335,623
1934	1,222,200	1,210,895	1942	1,658,800	1,643,456
1935	1,264,100	1,252,400	1947	1,987,800	2,011,923
1936	1,306,000	1,294,020	1952	2,326,000	2,458,117

Table 9. ANALYSIS OF SOIL IN NORTH MANCHURIA

Region	Percentage of Stones		Percentage of Sand				Nature of Soil
	Stone	Sand	Rough Sand	Medium Sand	Minute Sand	Moisture	
Tsitsihar	—	100.000	2.215	15.873	33.992	47.920	{ Humus, semi-inorganic
Suihua	—	100.000	0.313	7.215	38.537	53.935	Humus
Taian	—	100.000	1.943	10.808	33.237	54.012	Humus
Hailun	0.048	99.950	0.646	3.971	47.544	47.839	{ Humus, semi-inorganic
Koshan	—	100.000	0.860	3.051	38.907	57.182	Humus
Aigun	0.077	99.923	2.543	37.312	23.014	37.131	Inorganic

S.M.R., "Wheat in Heilungkiang Province", July, 1935.

According to surveys conducted on the soil of Koshan by the Koshan State Agricultural Experimental Station, it has been found that no stone content can be seen on the soil surface, and soil of fine particles with a good percentage of moisture, constitutes more than 50 per cent. Moisture increases to 57.4 per cent from a depth of 35 to 85 centimeters, and further to 60.98 per cent. at a depth of 1.20 meters, indicating the fact that North Manchurian soil is moist and of moderate density.

Table 10. CHEMICAL COMPOSITION OF SOIL IN WHEAT RAISING REGIONS (KOSHAN)

Depth of Soil (centimeters)	PH Nature	Tumus Soil	Pure		Absorb-		Absorb-		Analyzer
			Nitro- gen	phoric Acid	phoric Acid	Potas- sium	Potas- sium		
Surface ...	6.70	5.410	0.440	0.393	0.037	2.751	0.151	Dr. Hirai, Kyushu Imperial University	
0.35	7.03	4.900	0.327	0.234	0.020	0.318	0.073		Dr. Tsukinaga, Kungehuling Agricultural Experimental Station
35-85	6.18	2.799	0.327	0.234	0.020	0.318	0.073	"	
85-120	5.90	1.088	0.327	0.234	0.020	0.318	0.073		"
Aver. for Man- churian Soil	—	—	0.153	0.119	—	0.188	—	Dr. Tepkinaga	
Aver. for Japa- nese soil ..	6.20	—	0.228	0.109	0.041	0.274	0.034	Dr. Hirai, Kyushu Imperial University	

Department of Research, Yokohama Specie Bank, "Wheat and Flour Manufacturing in North Manchuria", August, 1936.

As indicated above, soil in the wheat raising sections of Manchuria is of the humus type, and presents the qualities specified by Blomeyer. The variety of wheat cultivated, belongs to the red wheat group, which conforms to the findings of Heuze regarding the combination of soil and the proper variety that should be grown. Furthermore, the percentage of moisture contained in the soil during the period of growth, has been given at 70 per cent. This fact strikes one with the impression that the percentage is too low, but with the completion of the irrigation program contemplated by the Manchoukuo Government, this deficiency will be amended, and it is expected that a tremendous increase in production will result from the expansion of the area of land used for wheat cultivation.

Varieties and Quality of Wheat and Flour

Varieties of wheat. There are still, little reliable material on the origin of wheat cultivation in Manchuria, but it seems as though the varieties of wheat presently under cultivation, came from Shantung Province, China. Some sources claim that varieties

imported from the Za-Baikal region are being raised together with the varieties under cultivation, in districts along the Heilungkiang River and in the Sanho Region.²

Mr. Murakoshi, head of Koshan Agricultural Experimental Station, classified the varieties of wheat grown in Manchuria according to the Kolniche, F. method of 1885. The classification is as follows:

Table 11. ORDINARY WHEAT (TRITICUM VULGARE)

(1) With Awn—		
White Earhead—Hairless—Red Grain—White Awn		{ Livingstone, Sapporo Spring Wheat
Hairy—Red Grain—Black Awn ..		{ Nunguan, Anta, improved variety, Fangcheng, Kota, Pioneer, Kharkov, 19 North Manchurian varieties
Red Earhead—Hairless—Red Grain—Red Awn ..		{ Huron, 4 North Manchurian varieties
Black Earhead—Hairy—Red Grain		{ Martin's Amber
(2) Without Awn—		
White Earhead—Hairless—White Grain		{ Bunyib, Sunset Wheat, Defiance Wheat
Red Grain		{ Red Fife, Russian Wheat, Sanhsing, Norwegian Spring Wheat, Fuchin, Tangyuan, Marquis Ruby, 12 North Manchurian varieties
Hairy—White Grain Pamir		
Red Grain—Minnesota 196		
Red Earhead—Hairless—White Grain—Hard Federation		
Red Grain—Borseem ...		{ 1 North Manchurian variety
Hard Grain Wheat (Triticum Durum)		
With Awn—Hairless—Red Earhead—Red Grain—White Awn (Rumanian)		
Hairy—Blue-Black—White Grain—(Coernlescens)		

"Wheat in Heilungkiang Province", S.M.R., Monthly Research Bulletin, July, 1934.

Of the above group, awnless wheat is found in South Manchuria and wheat with awn in North Manchuria primarily. In almost all parts of Manchuria, wheat with awn, white earhead, hairless, red grain, and of the white awn variety, with the excep-

² Yokohama Specie Bank, "Wheat and Flour in North Manchuria", August, 1936.

tion of a few varieties of the Za-Baikal type, is being raised.

Quality of wheat. All Manchurian wheat are of the red, hard grain type. Since it contains much gluten, it measures quite comfortably with Canadian wheat, and holds a prominent position among the wheat produced in other countries. In the following table, a qualitative comparison is made between Manchurian wheat and those produced in other countries.

Table 12. QUALITY OF WHEAT

Country	Fat	Soluble Non-nitro-			Ash
		Albumen	genous matter	Cellulose	
Manchuria	1.71%	17.06%	76.79%	2.49%	1.95%
Japan	2.02	14.12	79.89	3.38	1.83
Russia	1.81	19.31	76.04	2.53	1.97
Germany	2.12	12.81	81.10	2.53	2.57
England	2.15	12.69	81.00	3.35	1.93
India	2.40	12.99	82.14	2.22	1.67
North America	2.44	14.19	80.52	1.98	2.11

"Japan and Manchuria from the Standpoint of Supply and Demand of Wheat and Flour", S.M.R. Research Bulletin, No. 25, 1923.

Therefore, Manchurian wheat ranks quite high among those grown elsewhere, and with such a high content of albumen, next only to Russian wheat, it is one of the best in the world.

Due to the hot summer and the primitive cultivation methods, however, the yield is rather small, and crop failures are frequent. With the formulation of definite plans for increasing production, the Koshan, Harbin and Chiamussu state agricultural experimental stations collected varieties of wheat for spring sowing from Hokkaido, Japan, Canada, and Soviet Russia, and distributed these varieties for the purpose of increasing production, improving quality, and producing varieties that can withstand cold, through the pure lineage system and other experiments. Favorable results have been attained today as the following table indicates.

Table 13. KINDS OF WHEAT

Variety of Wheat	Yield of Grains			Weight per litre
	Kilograms per hectare	Koku per tan		
		Ratio		
Sapporo Spring Wheat	1,741	1.310	113	730
Huron Wheat	1,704	1.270	111	737
Kungchuling Improved No. 3	1,612	1.190	105	746
Nungan Wheat	1,546	1.170	101	726
Koshan	1,537	1.150	100	783

Quality of Flour. The outstanding characteristic wheat flour is the gluten content which is of great nutritive value. Therefore, flour manufacturers classify flour commercially according to gluten content or color. There are three classes of flour, (1) strong flour (high gluten content), (2) weak flour (low gluten content), and (3) ordinary flour (medium gluten content). They are utilized according to their qualities. However, gluten content is an inherent quality depending upon hardness or softness of the grain which in turn relies upon land and wheat variety. According to a survey conducted by the S.M.R., the gluten contents of the world's representative wheat are as follows:

Table 14. QUALITY OF FLOUR

Manchurian Wheat	40-50%
Australian Wheat	20-30
American Wheat	20-30
Japanese Wheat	20-30
Canadian Wheat	35-40
Argentine Wheat	30-35

"Manchurian Wheat Flour", Importers' Association, 1936.

Manchurian wheat contains much gluten, there being between 40 to 50 per cent., which is better than Japanese, Canadian, or Australian wheat. It is claimed that the wheat-gluten colored North Manchurian wheat is on par with Canadian Manitoba No. 1 wheat.

Due to insufficient sorting after harvest, the gathered-in wheat contains considerable dust, dirt and other foreign matter, making flour manufacturing very difficult and the produced flour exceedingly poor in quality. In the following table are given the percentage of flour produced from wheat in various countries.

Table 15. FLOUR COMPARED

Wheat	Percentage of Flour Milled	Percentage of Bran	Loss	Total
Manchurian Wheat	73.5%	21.5%	5.0%	100
Japanese Wheat	74.5	24.5	1.0	100
Canadian Wheat	78.5	21.5	—	100
American Wheat	79.0	20.0	1.0	100
American Red Wheat	79.0	20.0	1.0	100

Statistics from "ibid."

As it has been indicated above, Manchurian wheat is superior in quality for food purposes, but as raw material for flour-milling,

it ranks far below the Canadian, Australian and American varieties. This situation is no doubt, due to the lack of grading wheat to remove foreign matter, but the weight of the Manchurian wheat which determines the percentage of flour-milling, is rather light, being about 123 "zlotnik" (1 zlotnik equals 4.26575 grams). The weight of the Australian wheat is about 135 zlotnik on the average. Furthermore, water content of the Manchurian wheat is between 12 and 14 per cent., that of the Australian wheat being 8 per cent. This is another reason for the low average of flour milled. However, after conducting intense studies and experiments, the Manchuria Flour-Milling Company (the largest in Manchuria) has succeeded in producing 75 to 76 per cent of flour.

Present Wheat Production and Producing Regions

Wheat growing regions and their production. The northern part of Manchuria, especially along the lower Sungari River including Harbin, Chiamussu, and the region lining the Tsitsihar-Heiho Railway, or the general region lying between 43 degrees 8 minutes and 48 degrees 5 minutes north latitude, is the chief producing center of wheat in Manchuria. The region surrounding Mukden is the only wheat growing center of South Manchuria.

The land area used for wheat cultivation constitutes 8 per cent. of the total land area (14,668,000 hectares in 1938) under cultivation for raising Manchuria's principal crops, namely soya beans, kaoliang, millet, maize and wheat. Wheat production amounts to approximately 6 per cent. of the total agricultural products of the country or 17,515,000 metric tons.

The area of land used for wheat cultivation and the yield during the past 10 years, are given in the following table.

Table 16. AREA OF LAND USED FOR WHEAT GROWING AND PRODUCTION DURING THE PAST 10 YEARS

Year	Area of Land Under Cultivation (1,000 hectares)	Yield (1,000 metric tons)
1929	1,297	1,302
1930	1,381	1,357
1931	1,586	1,580
1932	1,395	1,133
1933	1,374	863

(Continued)

Year	Area of Land Under Cultivation (1,000 hectares)	Yield (1,000 metric tons)
1934	826	643
1935	993	1,015
1936	1,094	959
1937	1,216	1,126
1938	1,288	994

Statistics released by the Manchuria Agricultural Produce Joint Survey Committee.

The figures for 1938 are estimates of the second crop.

Table 17. AREA OF LAND UNDER CULTIVATION AND PRODUCTION ACCORDING TO PROVINCES

Province	Area of Land Under Cultivation (1,000 hectares)	Production (1,000 metric tons)
Kirin	83	62
Lungkiang	290	173
Heiho	9	6
Sankiang	149	149
Mutankiang	45	22
Pinkiang	450	367
Chientao	2	2
Tunghua	4	3
Antung	0	0
Fengtien	44	31
Chinchou	9	5
Total	1,085	820

Statistics from "ibid." (September, 1938).

Figures for 1938 in the above two tables differ somewhat, according to sources.

Economic value of wheat cultivation. According to the second estimate of 1938 of Manchurian agricultural products released by the Department of Industry of the Manchoukuo Government (the Manchoukuo Government releases estimates of production of the country's agricultural products for the year four times during the year), land used for raising soya beans constituted 25 per cent. of the total area of farmlands or 15,490,000 hectares, kaoliang 20.8 per cent., millet 17.6 per cent., maize 9.9 per cent., and wheat fifth place with 8.3 per cent.

Among the five crops, soya beans and wheat have the highest commercial value, and consequently, these two crops are raised

not for the purpose of household consumption, but with the intention of marketing them uppermost, but owing to weather conditions and the fluctuation of market prices, wheat cultivation has not shown the universal development seen in other crops. A number of experimental cultivation has not only proved the fact that the raising of this product is economically advantageous, but also the prominent position which wheat holds in the expenditure-income accounts of agricultural products, as the following figures show.

Table 18. INCOME FROM AND EXPENDITURES OF SOYA BEAN AND WHEAT PRODUCTION IN NORTH MANCHURIA (HAILUN-HSIEN)

(Unit: yuan per tan*)

	Soya Beans		Wheat	
	1929	1930	1929	1930
Seeds	0.50	0.24	0.77	0.49
Fertilizer	0.30	0.15	0.30	0.15
Labor cost	2.64	1.76	2.16	1.44
Live-stock	0.40	0.26	0.40	0.26
Materials	0.03	0.02	0.03	0.02
Taxes	0.22	0.14	0.22	0.14
Redemption on buildings	0.04	0.03	0.04	0.03
Redemption on farm implements ..	0.06	0.05	0.06	0.05
Tenant fees	3.33	1.61	3.33	1.16
Others	0.25	0.16	0.25	0.16
Total expenditures	7.55	4.28	7.34	4.21
Seeds sold	8.88	4.04	8.77	5.57
Stems and others sold	0.86	0.62	0.86	0.84
Total income	9.74	4.66	9.63	6.20
Profit	2.19	0.38	2.29	1.99

Figures compiled from surveys conducted by the Hailun Agricultural Experimental Station, Nisshin Flour-Milling Co., "Japanese Immigration, Wheat Production and Flour-Milling Policy in Regard to North Manchuria", and "Survey No. 100" of the Yokohama Specie Bank.

* 1 "tan" equals 1/10 hectare.

Table 19. INCOME AND EXPENDITURES PER HECTARE ACCORDING TO CROPS CULTIVATED BY NATIVE METHODS

(Units: metric ton, yuan)

Crop	Production		Income		Total	Expen- ditures	Profit
	Bean or Grain	Stem	Bean or Grain	Stem			
Soya Bean	1,652	2,928	84.40	9.28	93.68	63.61	30.07
Wheat	1,456	2,944	108.91	5.43	114.34	57.66	56.68
Millet	1,950	4,233	72.27	10.46	82.73	67.03	15.70
Barley	2,167	2,871	69.26	5.24	74.50	54.08	20.42
Perilla	806	4,093	73.14	11.05	84.19	79.13	5.04

Statistics from Koshan Agricultural Experimental Station.

As the above table shows, soya beans and wheat are not always profitable, and when wheat is raised consecutively for a number of years, the use of fertilizer becomes necessary, but in general, wheat measures comfortably with soya beans in profitability.

Since wheat is very sensitive to weather conditions, there were years in the past when farm economy was threatened, due to poor crops. In consequence, many farmers took to soya bean cultivation which involved less risks, and in which the producers were well experienced. However, wheat can be harvested earlier than soya beans, and can be marketed far ahead of the latter. In consequence, farmers have come to raise the capital needed to carry out cultivation of other crops for the autumn harvest from the income supplied by wheat, or as a reserve against eventualities. Thanks to the encouragement given by the Manchukuo Government, the general rural population are becoming more interested in the cultivation of wheat than before.

Table 20. LEGALIZED AREA FOR POPPY GROWING

	Jehol	Kirin	West						Total	
			Hsin-gan	Feng-tien	Chin-chow	An-tung	Chien-tao	Pin-kiang		San-kiang
1933	580	361	—	—	—	—	—	—	941	
1934	460	486	40	80	—	—	—	—	1,066	
1935	310	—	10	—	30	10	145	50	135	690
1936	600	—	50	—	—	—	—	30	200	880
1937	700	—	50	—	—	—	—	30	250	1,030
1938	650	—	60	—	—	—	—	—	—	710

Table 21. STATE PURCHASES AND SALES OF OPIUM

	Quantity in liang (1 liang=50 grams); Value in MY			
	Purchased		Sold	
	Quantity	Value	Quantity	Value
1933	3,429,601	7,630,775	1,220,403	5,511,033
1934	6,612,951	14,999,670	3,808,499	14,372,726
1935	7,601,254	15,362,449	7,780,606	28,230,347
1936	10,307,943	19,834,666	10,108,223	38,667,556
1937	13,500,000	29,025,000	12,300,000	47,850,000

Mechanical Farming

Heavy rains which come around autumn in North Manchuria present a threatening danger to mechanical farming, one that cannot be dismissed lightly. In the case of wheat cultivation the use of a combine for harvesting and threshing saves much time, effort and expense, a device which is virtually indispensable, but when there is heavy rainfall, this machinery cannot be operated at all.

Table 22. IMPORTS OF AGRICULTURAL MACHINERIES, IMPLEMENTS, TOOLS, ETC.

	Value (in MY)		
1933	122,557	1936	986,847
1934	157,836	1937	2,306,741
1935	606,119	1938	1,241,273
		1939	2,725,517

A caterpillar tractor can be employed effectively on a field dampened by about 12 millimeters of rain, but when the amount of rain is between 12 and 30 millimeters, a day is lost providing fair weather prevails the following day and similarly two days if the fall is between 30 and 50 millimeters. Similar limitations are dictated by rainfall to the use of combines. Therefore, it is quite apparent that rain falling heavily in August, September and October inflicts considerable damage upon mechanical farming in the central plains of North Manchuria. According to records of observation compiled in the vicinity of Hailar during the past ten years, the consecutive number of days in which combines were rendered useless during the month of August are, 1926 3 days, 1928 5 days, 1929 12 days, 1930 6 days, 1931 10 days, 1932 3 days, and 1933 3 days. Since wheat harvesting in North Manchuria re-

quires some 10 to 13 days, a loss of 4 to 6 days in the midst of harvest operations results in the loss of the yield from tracts of land that cannot be covered. Therefore, in regions where rainfall is rather heavy harvesting and threshing operations have been divided as a safety first measure even though this method costs more than the combine method. However, the region around Hailar is much drier than parts of Japan or the United States in late autumn, and it is said that even soya beans can be harvested with a caterpillar tractor in rain. If such is the case, mechanical farming will prove to be much more advantageous and economical than native farming methods.

Due to lack of information, it is still difficult to say whether farming with machinery or by means of native methods is more profitable in Manchuria today, but according to the management record for 15 years of Mr. Voroshitsoff, a Russian farmer of Yakushih in North Manchuria, mechanical farming has produced good results. Other farmers have given similar replies making it almost certain that the possibility of losses in mechanical farming is low.

The Manchoukuo Government is presently expending much effort for the diffusion of mechanical farming in view of the urgent demand for the increase and expansion of farm products. A farm with a minimum area of 500 hectares is said to be ideal for mechanical farming. In North Manchuria which is known as the granary of Manchuria, especially about Koshan, a large farmer tills about 50 hectares on the average, a middle farmer about 30 hectares and a small farmer about 13 hectares, the profits from which are 18 yuan, 22 yuan, and 20 yuan per hectare, respectively. If these farmers were to increase the area of land for cultivation, an increase in profits through native farming methods cannot be expected. On the contrary, the percentage of profit will diminish to about 16 yuan per hectare if the average is increased to 100 hectares, while an increase of this area to 200 hectares or more is deemed impossible.

On a 500 hectare farm, which is held ideal for mechanical farming, the area can be covered effectively with a 30 horsepower tractor, a 20 horsepower tractor and 10 horses. Although it is believed that a loss of 15 yuan per hectare would arise if the area of cultivated land for mechanical farming is 100 hectares, a profit

of 9 yuan per hectare can be realized if the area is increased to 25 hectares. The profit further rises to 21 yuan per hectare from 500 hectares and 33 yuan per hectare if the area is increased to 1,000 hectares. In other words, a decline in the rate of profit will take place if the area of land cultivated by native methods is increased above the practical limit, but net profit per hectare will increase in proportion to the increase in the area of land cultivated with agricultural machinery. Furthermore, the use of machinery for weeding, threshing and other purposes is absolutely an advantage over native farming methods. The high cost of fuel required in operating machinery and the absence of firms for the manufacture of machinery are problems which mechanical farming must still face, but the use of petroleum for fuel and the possibility of companies being organized in Japan in view of the great demand for agricultural machinery will undoubtedly iron out the difficulties confronted by this rising agricultural industry.

Table 23. STATISTICS ON GRANARIES

	Minimum* quantity cereal holdings (Koku)	Minimum Capacity (Tsubo)	State Subsidy	
			Construction expenses (M¥)	Other expenses (M¥)
Kirin Hsien ...	222,750	742.5	51,583	88,200
Lungkiang ,, ...	87,750	292.5	29,709	42,924
Heiho ,, ...	2,400	8.0	1,390	2,293
Sankiang ,, ...	39,900	133.0	11,920	17,052
Pinkiang ,, ...	200,250	667.5	52,200	91,728
Mutankiang ,, ...				
Chientao ,, ...	21,000	70.0	4,040	9,878
Antung ,, ...	141,000	470.0	46,440	54,096
Tunghua ,, ...				
Fengtjen ,, ...	411,450	1,371.5	122,819	167,757
Chinehow ,, ...	144,000	480.0	55,100	52,272
Jehol ,, ...	106,500	355.0	37,964	51,744
Hsingan ,, ...	14,250	47.5	5,700	7,056
Total	1,391,250	4,637.5	418,865	585,000

Note: * Each hsien is furthermore required by law to command the financial resources to double its minimum quantity of stored cereals. The said quantity shall be determined by the Civil Affairs Minister (at present the Minister of the Department of Agriculture).

Public Granaries

By Departmental Order No. 14, August 31, 1935, the Regulations for the Control of Public Granaries were announced by the Department of Civil Affairs. The sum of M¥3,000,000 is being distributed throughout the country as funds and subsidies for building the necessary granaries. The new regulations will enable each "hsien" or county to collect grains from the people and store them for emergency relief and other similar purposes, particularly, in cases of disasters or calamities or for supplying the poor with foodstuffs or furnishing them with needed funds.

CHAPTER XVI STOCK-BREEDING

Cattle

The native cattle are of two types, namely, Mongolian and Manchurian. The former are chiefly reared in western Manchuria adjoining Mongolia, and in West Hsingan Province, and the latter in the Changpai mountain regions. Very few are raised in the vast Manchurian plains that form the central portion of the country.

In the eastern part of Manchuria, cattle are used for cultivation, in the western Mongol banner districts they are reared for obtaining milk. It should be observed that Manchurians and Chinese generally do not like milk very much. Milk was formerly consumed only by the Mongols, but in recent years the demand for this product has increased owing to the rise of the Japanese population in Manchuria. As a result Japanese-managed dairy farms have sprung up in various parts of South Manchuria.

Though the native breeds are sturdy, have strong power of resistance to disease, and are able to live on poor food, they are small when compared to Korean or Japanese cattle, and are not so useful as draught animals as the other species. In economic value, in consequence they are inferior to Korean and Japanese cattle.

It is estimated that 1,683,000 head of cattle are raised by some 540,000 households in Manchuria in 1937.

Horses

Almost all the horses raised in Manchuria are Mongolian breeds. Although they are small in stature, the native horses are large-boned, have strong legs and are capable of working long hours, withstanding bitter cold climate, and living on poor and scanty food. The Hulunbair district is the chief supplier of horses to North Manchuria. In South Manchuria those bred in the east-

ern part of Mongolia, particularly Wuchumuchi, Chahar Province, are famous. The Manchoukuo Government, in accordance with its horse-raising program, is directing its efforts to improve the native breeds by crossing them with Arab, Anglo-Norman and other superior strains imported from abroad. For this purpose State stud-farms have been established in various parts of the country. Horse-raising in Manchuria has a bright future because of the extensive pasture lands and the large demand for military mounts.

About 1,800,000 horses are raised in Manchuria. In proportion to the area of the country, this number is very small when compared with 1,448,481 horses raised in Japan, which is little more than half the area of Manchuria. Besides Mongol horses, Hailar breeds are raised in the Hailar, Manchouli and Jalainor districts, Russian horses in the Houpeichiaerhlai district, and Sanbeis breeds in the regions west of the Hsingan Mountains.

The number of horned cattle, sheep, goats, swine and camels as of September, 1937 is tabulated below:

Table 1. NUMBER OF DOMESTIC ANIMALS

	Horned Cattle	Sheep	Goats	Swine	Camels
1936 (August)	1,401,300	1,668,700	742,500	5,852,300	11,000
1937 (September)	1,683,200	1,965,900	1,243,000	5,335,800	12,800
1937:					
Kirin	77,300	22,100	5,400	716,300	—
Lungkiang	118,100	53,600	12,500	644,400	—
Heiho	4,100	300	—	16,700	—
Sankiang	48,200	1,700	500	167,200	—
Mutankiang	17,200	1,400	1,000	66,700	—
Pinkiang	89,100	37,900	3,400	878,700	—
Chientao	53,400	1,000	200	93,100	—
Tunghua	19,200	300	1,100	68,100	—
Antung	118,700	200	7,800	252,800	—
Fengtien	158,400	29,500	16,600	1,073,200	—
Chinchow	97,400	196,300	85,200	562,800	—
Jehol	276,700	247,700	785,400	549,500	1,300
Hsingan W.	183,100	147,900	182,600	53,300	1,700
" S.	214,700	83,300	87,700	164,600	800
" E.	11,700	1,300	100	17,300	—
" N.	195,400	1,141,300	53,500	5,700	9,000
Hsinking	500	100	—	5,400	—
Total	1,683,200	1,965,900	1,243,000	5,335,800	12,800

Note: Statistics of horses are not available.

Hogs

Most of the hogs raised in Manchuria are Chinese stock, originally brought here by the Chinese when they migrated to Manchuria. They are raised for their meat throughout the country, particularly in Fengtien and Pinkiang provinces, by Manchurian farming households who invariably keep scores of them. Pork, however, is not eaten by Mohammedans and Mongols in accordance with religious custom.

Considerable pork is consumed at home, while live hogs, bristles and intestines are exported. Bristles are particularly in demand for making shaving brushes and have great commercial value. Manchurian hogs are generally prolific but mature late. Although they are very hardy and can subsist on almost any kind of food, their bodies are rather lean and the meat somewhat tough. In order to improve the native-breeds, the Manchoukuo Government and other agencies are actively encouraging hog-raisers to cross the native species with imported Berkshires. As a result, superior breeds are being gradually produced in increasing numbers.

Manchurian hogs are of three types, large, medium and small, but are all black in color. In addition to the native stock, there are improved Russian breeds (white and of great economic value) and improved breeds of Manchurian hogs. It is estimated that 2,530,000 households are raising a total of 5,336,000 hogs. Aside from pigs' bristles, pigskin is widely used in place of cowhide and horsehide. A promising future is in store for the pigskin tanning industry in view of the large number of hogs raised in Manchuria.

Pigs' bristles are practically all exported abroad, chiefly to America, Japan, China, Hongkong, Great Britain and Germany. Exports of this product in 1939 amounted to 668 metric tons valued at ¥6,595,447.

Goats

Jehol is the leading goat-raising province, followed by West Hsingan Province. The number of goats raised in the country totals some 1,243,000.

Camels

Camels are raised chiefly in North and West Hsingan provinces, particularly in the Hulunbair district (where many Mongols are engaged in this occupation) and to a certain extent in South Hsingan and Jehol provinces. They are good pack and draught animals, but their number is gradually decreasing, and it is estimated that there are now about 12,800 camels in the country. Two species of camels, namely, the Arabian or one-humped, and the Bactrian or two humped, are found in Asia. Those belonging to the latter species are chiefly raised in Manchuria as they are able to stand the cold climate far better than Arabian camels.

Manchurian camel-hair possesses great elasticity, is of excellent quality and is highly valued as material for making woollen goods. The greater part of the country's production is consumed at home, while the remainder finds a ready market abroad. Exports for 1937 amounted to 53,996 chin valued at ¥41,882.

Deer and Angora Rabbits

Deer-raising is carried on only in parts of Kirin, Fengtien, Heiho and Jehol provinces, for making highly valued drugs obtainable from the antlers. Besides the above animals, Angora rabbits are raised for their wool, which is better than camel-hair in quality and is used for making high-grade hats and fabrics. The raising of silver foxes for exportation abroad is also under experimentation.

Sheep

In Mongolia sheep and goats are extensively raised by the inhabitants as their principle occupation, and constitute their most important source of livelihood. Native sheep were formerly reared only for their meat and skins, but in recent years efforts have been directed to their improvement for the production of high quality wool. The amount of wool produced from native stock is small, and the quality is poor, inferior in texture and elasticity. As the wool is not suitable for making high quality woollen yarns; it is only used for making low grade woollen cloth, felt, blankets and rugs.

In accordance with the five-year industrial plan (1937-42), the Government, with the object of attaining self-sufficiency in wool, is importing large numbers of Merino, Corriedale and other superior strains for breeding purposes. The Government plans to produce 4,000,000 head of improved sheep and 4,500,000 metric tons of wool within the five-year period.

Some 1,965,900 head of sheep are raised in Manchuria at present, principally in the Mongol grasslands in the western section, covering the four Hsingan Provinces, Jehol Province and Chinchow Province.

The livestock section of the South Manchuria Railway Experiment Station has since 1924 carried on extensive experiments with a view to raising the quality and quantity of sheep's wool. An accompanying table shows that the Merino breed cared for at the Experiment Station produced almost seven times as much wool as the Mongolian breed.

Table 7. WOOL YIELD BY BREEDS

	Sex	Age (Year) over	No.	Volume of wool per head	
				(Grams)	%
Mongolian breed	Female	2 or 3	2,928	1,182	100
Merino-Mongolian cross-breed	"	"	"	2,456	208
Ditto, improved breed	"	"	"	2,863	243
Merino	"	3	427	5,860	496
Mongolian breed	Male	2 or 3	356	1,610	136
Merino-Mongolian cross-breed	"	"	"	3,421	289
Ditto, improved breed	"	"	"	4,581	388
Merino	"	3	193	8,060	682

The Government also drew up a 30 year plan for expanding the sheep raising industry. According to this plan the total number of sheep would aggregate 15,000,000 heads in 1967, this figure being exclusive of 120,000 heads to be raised in Kwantung Province. Details of the plan are tabulated below:

Table 6. 30-YEAR PLAN FOR SHEEP'S WOOL PRODUCTION IN MANCHOUKUO AND KWANTUNG PROVINCE

(a) No. of sheep (1,000 heads)

	Manchoukuo			Kwantung Province		
	Thorough bred	Improved bred	Native bred	Corriedale	Improved bred	Native bred
1937	8	24	3,080	1.6	1.9	0.9
1938	14	35	3,220	2.1	2.7	0.9

	Manchoukuo			Kwantung Province		
	Thorough bred	Improved bred	Native bred	Corriedale	Improved bred	Native bred
1939	20	91	3,386	3.2	3.8	0.9
1940	26	161	3,619	4.3	5.1	0.8
1941	35	310	3,857	5.8	6.7	0.8
1946	3,163		3,115	25.6	24.7	0.7
1951	5,982		2,374	113.8		0.5
1956	8,800		1,632	115.7		0.3
1961	11,618		890	116.6		0.2
1966	14,436		148	119.6		0.0
1967	15,000		—	120.0		—

(b) Wool production (1,000 pounds)

	Manchoukuo		Kwantung Province	
	Thorough & improved bred	Native bred	Corriedale & improved bred	Native bred
1937	209	6,790	24.2	2.1
1938	329	7,099	33.3	2.0
1939	670	7,465	49.2	1.9
1940	1,091	7,978	66.0	1.9
1941	1,955	8,503	88.1	1.8
1946	22,143	6,868	351.7	1.5
1951	41,871	5,233	796.3	1.1
1956	61,599	3,597	809.9	0.8
1961	81,326	1,962	823.6	0.4
1966	101,054	327	837.2	0.0
1967	105,000	—	840.0	—

Donkeys and Mules

Donkeys are raised chiefly in Fengtien, Antung and Jehol Provinces in South Manchuria, and are fine breeds. There are two species, large and small, but the latter are generally used for farm cultivation as well as for domestic work and as pack animals. They are hardy and can subsist on poor food. About 620,000 donkeys are raised in Manchuria.

Manchurian mules, raised only in farming districts, produced by crossing stallions with donkeys, are larger than Mongolian horses, being from 1.3 to 1.6 meters high, are gentle in nature, sturdy, and capable of working long hours. Very few are raised

in North Manchuria as they do not stand severe climate conditions very well. The number of mules raised in Manchuria totals between 560,000 and 570,000 and is smaller than that of donkeys.

The number of domestic animals slaughtered in 1937 is shown in the subjoined table:

Table 2. NO. OF ANIMALS SLAUGHTERED
(1937)

	No. of Heads	Meat (Kilogram)	Meat per Head (Kilogram)
Cattle	170,717	25,607,550	150
Horse & Mule	7,899	631,920	80
Ass	6,558	363,480	60
Swine	1,641,851	106,720,315	65
Sheep	179,196	268,794	15
Goat	72,868	874,504	12
Calf	10,517	473,265	45
Colt	41	825	20
Hogling	4,058	24,348	6

The situation in the export of live animals and animal products from Manchuria is tabulated as follows:

Table 3. EXPORTS OF LIVE ANIMALS CLASSIFIED
(Value in M¥1,000)

	Cattle		Horse, Mule & Ass		Pig		Sheep & Goat	
	No.	value	No.	value	No.	value	No.	value
1936	22,150	520	1,818	83	20,275	95	134,421	497
1937	24,435	588	5,998	131	24,164	116	132,897	506
1938	4,674	161	3,729	166	11,966	137	69,496	516
1939	416	49	535	94	18,570	230	46,735	291

Table 4. EXPORTS OF ANIMAL PRODUCTS
(Value in M¥1,000)

	Bristle		Horse Hair & Others		Butter (Value)	Horn (Value)	Animal Bone	
	(M. tons)	(Value)	(M. tons)	(Value)			(M. tons)	(Value)
1936 ...	995	4,404	2,322	1,651	12.0	124.9	13,450	372
1937 ...	870	6,541	2,320	2,122	0.7	64.4	12,979	392
1938 ...	558	5,472	1,858	2,213	15.3	3.7	44,764	149
1939 ...	668	6,595	802	2,278	6.7	3.2	1,790	132

(Continued)

	Animal Fat		Beef (Value)	*Pheasant		Hide & Leather		Skins (Value)
	(M. tons)	(Value)		(1,000)	(Value)	(M. tons)	(Value)	
1936	27.8	7.2	474	—	159	930	654	5,132
1937	29.8	8.6	472	—	235	958	733	4,635
1938	12.0	4.4	921	417	365	738	1,208	4,998
1939	32.0	15.3	405	331	339	73	723	3,434

A fair trade in the import of pastoral products and leather is done also, the latest available figures being as follows:

Table 5. IMPORTS OF ANIMAL PRODUCTS CLASSIFIED
(Value in M¥1,000)

	Butter & Cheese (Value)	Other Milk Products (Value)	Egg, hens'		Hide (Value)	Leather (Value)	Fur (Value)
			(M. tons)	(Value)			
1936	137	962	1,767	597	1,695	4,041	1,474
1937	175	1,268	1,060	426	1,557	3,834	1,942
1938	123	1,452	210	97	1,834	5,810	2,938
1939	84	1,872	282	395	187	4,660	1,587

Chickens

It is estimated that 450,000 chickens are raised in Manchuria. Most of them are native stock and are mixed breeds which have degenerated from the Asiatic species. The native species are generally small-boned and hens do not lay more than 100 eggs a year. The large variety of native stock is reared in Fu-hsien, Chuangho-hsien, and in the Pitzuwo district, Kwantung Territory. Their productive capacity is about 60 eggs annually.

In addition to the native species, superior egg-laying breeds such as the White Leghorns, Rhode Island Reds and the Nagoya (Japanese) have been imported and are raised extensively in districts along the former S.M.R. lines. The native species are raised chiefly as table fowl, the meat being known for its fine flavour, while the raising of improved species is being actively encouraged for production of eggs. Incubation by the Korean heating system, though primitive, is being pursued with satisfactory results. Chicken manure, when used in tanning hides, does not deteriorate the quality of hides and moreover makes them fine and smooth in texture. Much attention is therefore being paid to the utilization of this product in hide tanning.

Manchuria Live-Stock Industry Co.

The Manchuria Live-Stock Industry Company, which was established in August, 1937 as a semi-governmental corporation on a capital of 5 million yuan, half of which is paid-up, to play a leading role in the guidance and improvement of live-stock raising is to be reorganized into a special governmental corporation, simultaneously with collection of its unpaid capital to the amount of ¥2,500,000, it has been tentatively decided by the Manchoukuo Department of Industry and other authorities concerned.

The Company, after its reorganization, will undertake the following enterprises: (1) The company will loan money to the live-stock exchanges to facilitate fair transactions. (2) Loaning money to the Agricultural Association. Besides, assisting its enterprises.

The Manchuria Live-Stock Industry Company, it is reported, will take part in the manufacture of commodities from farm produce.

CHAPTER XVII

FORESTRY

The forest zones throughout Manchuria cover a total area of 88,000,000 hectares, including 22,000,000 hectares with standing trees and 66,000,000 hectares without standing trees. The volume of standing timber in the country is estimated at approximately 3,800,000,000 cubic meters, including 2,300,000,000 cubic meters of the broad-leaved class and 1,500,000,000 cubic meters of the needle-leaved class. The forests in Manchoukuo are mostly located within the frigid zone with only a small part within the temperate zone in the north. These forests are composed of more than 350 known species or plants including 29 species recognized as useful.

Needle-leaved Class: Korean pines, firs, spruce, silver firs etc. Broad-leaved Class: Oak, elm, birch, maple, walnut, lime, willow, acacia and poplar, etc.

Besides serving as timber, these trees are utilized as material for the manufacture of pulp, railway ties, mine-posts, telegraph and telephone poles, charcoal and match-sticks. The production of timber has increased from 700,000-800,000 cubic meters, at the inauguration of the Manchoukuo regime, to 1,600,000-1,700,000 cubic meters as the result of an adjustment of the forestry administration and rapid progress in construction and building works. The forestry resources may be exploited to a greater extent on the strength of the increasing demand in Japan for timber for the manufacture of pulp and other purposes and along with the perfection of the means of transportation.

Simultaneously with the endeavor to promote the exploitation of the nation's forest resources, the Manchoukuo Government is working out a large-scale program for reforestation with a view to the permanent preservation of the nation's resources in this respect. It has been decided to establish a thirty-year reforestation program as the first-stage work in this connection on the basis of the survey now being conducted in regard to the forests and fields in the country. According to this plan, a total area

of tens of thousands of hectares will be reforested every year. This affords the hope that like various other foreign countries, Manchoukuo will succeed in securing a large part of its territory to forests in the near future.

Distribution of Forest Zones

The forest zones of Manchoukuo principally lie in the northern and eastern sections, namely, in Kirin, Sankiang, Pinkiang, Chientao and Fengtien Provinces, and in some parts of Heiho, Lungkiang and Hsingan Provinces. According to the natural features of the land and artificial divisional environments, these forest zones are divided into ten forest districts, viz.—(1) The Yalu Valley forests, (2) the Tumenkiang Valley forests, (3) the Sungari Valley forests, (4) the Mutankiang forests, (5) the Lalin River Valley, (6) the Sanhsing forests, (7) the forest zone along the Harbin-Suifenho line (8) the Great Hsingan forests, (9) the forest zone along the western division of the North Manchuria Railway line, and (10) the Little Hsingan forests. Excepting the last named forests, these forest zones all occur in the former Kirin and Fengtien Provinces.

Before the foundation of Manchoukuo, little attention was paid to forests and fields. Forests were subjected to indiscriminate felling, and were left to the ravages of fires, with the result that only the natural forests in regions difficult of access remained, though these cover a very considerable area.

Since the establishment of Manchoukuo, the demand for timber has increased in a marked manner, involving no small import of foreign timber. The outbreak of the China Affair and the railway enterprise in North China on the one hand, and the increased production of pulp and extension of mining on the other heightened the demand for timber. To meet this situation, the Manchoukuo Government directed its efforts to the improvement of the forestry administration as well as of the traffic system, with a view to self-sufficiency in timber supply. In 1938, the production of timber was to have been 12,000,000 koku (one koku equals 10 cubic feet). The upward revision of the five year industrial programme included intensified production of timber as an important item.

The area covered by the standing trees is about 1.4 times the total area of Japan proper. It will be easy to supply timber to

Japan from the eight provinces of Manchoukuo, namely, Antung, Fengtien, Kirin, Chentao, Pinkiang, Sankiang, Tunghua, and Mutankiang; while the forest resources of Lungkiang, Heiho, Chinchow, Jehol and the four Hsingan provinces will naturally be assigned for the domestic market.

Forest Area

The total forest area of Manchuria in 1938 was estimated by the forest authorities of the Manchoukuo Government at 87,740,000 hectares. Of this area about one-third is covered with trees, while the rest consists of moorlands. The volume of standing trees is estimated at 3,719,096,000 cubic meters, representing 1,476,647,000 cubic meters of needle-leaf trees and 2,242,450,000 cubic meters of broad-leafed trees.

Table 1. THE WEALTH OF FOREST BY PROVINCES
(1938)

Provinces:	Area (1,000 hectares)			Volume of Standing Trees (1,000 cubic meters)		
	With Trees	Without Trees	Total	Needle- leaf	Broad- leaf	Total
Kirin	997	3,613	4,610	121,640	70,732	192,372
Lungkiang	1,181	6,801	7,981	38,823	142,741	181,565
Heiho	4,681	4,184	8,865	297,294	514,609	811,903
Sankiang	2,603	4,675	7,277	187,146	255,389	442,535
Pinkiang	881	3,123	4,004	27,697	84,235	111,933
Mutankiang	1,238	2,792	4,031	21,922	81,649	163,571
Chientao	1,234	918	2,151	85,022	84,432	169,454
Antung	58	1,481	1,539	—	4,941	4,941
Fengtien	34	3,393	3,387	—	2,973	2,873
Tunghua	778	1,559	2,337	61,874	95,034	156,907
Chinchow	—	2,448	2,448	—	—	—
Jehol	62	6,589	6,651	1,671	3,984	5,655
4 Hsingan Provs. ...	8,197	24,261	32,458	573,557	901,831	1,475,388
Total	21,943	65,797	87,740	1,476,647	2,242,450	3,719,096

Timber Species

Viewed from the standpoint of dendrologists, certain forests of Manchoukuo belong to the same class as those of the northern part of the temperate zone. The principal, however, belong to the frigid zone, being more or less similar to the Hokkaido forests. Some three hundred species of trees are needle-leafed (coniferous)

trees, and twenty-one broad-leafed (deciduous) varieties. Of the conifers, Korean pines (*Pinus koraiensis*) are distributed most extensively through the eastern and northwestern parts of the land. They live longer than any other trees and often grow to several feet in diameter reaching a height of more than a hundred feet. Next to the Korean pines, the species of larch (*Larix Dahurica*) grow straight and tall, challenging the supremacy of the Korean pines, in many places. Of the conifers, firs, spruce and silver firs are found in abundance. Among deciduous trees, there are several kinds of oak, elm, birch, maple, walnut, lime, willow, acacia and poplar. Forests of birch are peculiar to North Manchuria and are found intermingled with other forest growth. Birch forests are found along the North Manchuria Railway lines and over the Hsingan Ranges.

(1) **Yalu District.** Yalu timber consists of those descriptions which are supplied by the forests in the valley of the Yalu and in the upper course of its branch stream, or the Hunkian and sent to Antung through these rivers. They represent chiefly needle-leafed trees such as pines, cedars, etc. and supplied in 1938 a total of 682,698 koku (1 Manchoukuo koku equals 0.369 cubic meter) of timber.

(2) **Kirin District.** Kirin timber represents timber that is produced in the upper course of the Sungari and sent to Kirin by water. They are of the same species as Yalu timber. Output in 1938 was 1,372,676 koku.

(3) **Chientao District.** The Chientao timber is produced in the valleys of the Tumen and its branches and of the Hunchun. It accounted for 238,792 koku of timber in 1938.

(4) **North Manchurian District.** This comprises timber produced in the mountain ranges of Yaoyeh, Hsiaopai, Changkwang-tsai, Mutanling and Harbin and sent to various points on the Pinesui Line. The production of this group amounted to 4,585,714 koku in 1938. Needle-leafed trees also occupy the greater part of the output.

Production. The annual production of timber was 3,800,000 to 3,900,000 koku in the few years preceding the foundation of the Empire. With the growing improvement of various systems and institutions, timber output began to recover from 1934 and registered 6,889,871 koku in 1938.

Consumption. The average consumption of timber in the five years preceding the founding of the Empire is put at roughly 3,400,000 koku. At the time of the opening of the country timber consumption decreased by over 1,000,000 koku due to the stagnation of various undertakings. With the development of construction works, however, the consumption soon began to increase swiftly reaching 5,000,000 koku in 1932, 6,200,000 koku in 1934 and 6,309,000 koku in 1936. In the past the use of timber had been confined chiefly to construction materials in general, sleepers, spikes, fuel, etc. In view, however, of the recent growth of the forest products industries, especially the manufacture of pulp, it is generally observed that timber consumption in Manchoukuo will greatly increase in the future.

The demand and supply of timber since 1932 is as follows:

Table 2. DEMAND AND SUPPLY OF TIMBER

(Unit: in 1,000 Cubic Meters)

	Output		Import		Export		Consumption	
	Amount	Index	Amount	Index	Amount	Index	Amount	Index
1932	897	67	136	19	221	163	812	43
1933	1,001	74	508	72	110	67	1,400	74
1934	1,346	100	709	100	163	100	1,892	100
1935	1,839	137	531	75	208	128	2,161	114
1936	1,845	137	403	57	164	101	2,058	110
1937	2,771	206	527	74	137	84	3,161	167
1938	3,557	264	731	103	124	76	4,164	220

The output of timber products by districts is as follows:

Table 3. FORESTRY OUTPUT BY DISTRICTS AND KINDS (1938)

(Unit in 1,000 new Manchoukuo "Koku"; one "Koku" 0.369 cubic m.)

District:	General Lumber	Special Lumber				Total Grand Total	Others (1,000 piculs)	
		Telegraph Poles	Spikes	Sleepers incl. logs	Firewood		Charcoal	
Yalu District	377	17.2	147	91	316	693	81.5	605
Kirin	988	4.4	82	238	385	1,373	55.8	191
Chientao	185	3.2	8	20	54	239	37.8	114
North Manchuria District	2,782	220.0	220	914	1,804	4,586	177.4	628
Eastern Section	910	22.1	40	99	316	1,226	34.8	86
Northern	545	20.7	—	19	90	635	31.6	138
Hsingan	283	175.4	105	646	962	1,246	20.2	87
Sungari	1,043	1.8	75	150	436	1,479	90.8	316
Total	4,331	244.8	467	1,264	2,559	6,890	352.5	1,538

The activity of guilds of lumber producers in Manchoukuo, and the scope of their business is shown in the following table:

Table 4. OUTLINE OF LUMBER PRODUCERS' GUILDS IN MANCHOUKUO
(End of 1937)

(Member Companies of Association of Manchuria Lumber Producers' Guilds)

	Member cos.	No. of mills	Capital (M¥1,000)	Lumbering machines	No. of workers	Lumbering capacity per day (cub. ft.)	Output in 1937	
							Volume (1,000 Cub. ft.)	Value (M¥1,000)
Harbin	34	4	2,000	80	839	19,800	3,200	4,300
Tunhua	25	3	712	40	246	7,900	810	1,025
Tumen	18	4	3,040	60	281	8,100	1,212	1,429
Fushun	2	2	100	11	54	1,810	315	4,725
Aushan	4	—	—	—	—	—	—	—
Antung	23	1	1,000	229	1,241	30,000	4,800	5,182
Kirin	68	7	2,790	133	939	19,300	4,367	5,885
Hsinking	25	10	1,515	145	939	24,000	4,814	6,643
Mutankiang	20	4	1,155	120	1,036	22,460	2,473	3,032
Lungtsing	16	2	600	39	415	4,790	5	8
Fengtien	13	5	4,274	64	284	8,800	1,750	2,620
Total	248	42	17,185	921	6,274	146,960	23,746	30,596

Export and Import of Timber. In the few years preceding the Manchurian Incident the foreign trade of Manchuria in timber yearly amounted to 850,000 to 1,400,000 koku in exports and to 500,000 to 850,000 koku in imports, resulting in an export excess of 100-900,000 koku. Directly after the incident the trade considerably shrivelled. Soon after the establishment of the new Empire, however, the demand for timber increased in marked manner due to the growth of various construction works, so much so that even the expansion in timber production as stated above proved woefully insufficient with the result that the country turned from a timber exporter to an importer. Total timber imports in 1938 were valued at ¥23,967,000, of which ¥20,729,000 was accounted for by Japan.

Exports of timber consist chiefly of the Yalu description, the major part going to Korea and a small portion to North China. A modest quantity of superior grades of Chientao and North Manchurian products is also sent to Japan and China.

Table 5. EXPORT OF TIMBER AND WOOD

	1938		1939		Increase or Decrease (M¥)
	Volume (Cubic meters)	Value (M¥)	Volume (Cubic meters)	Value (M¥)	
Timber:					
Logs & Cants	83,698	2,975,026	18,796	701,309	-2,273,717
Sawn	39,934	2,743,067	4,178	556,730	-1,186,337
Others	—	36,085	—	2,722	- 33,363
Total	—	4,754,178	—	1,260,761	-3,493,417
Railway Sleeper (pieces)	123,252	192,968	34,493	66,724	- 126,244
Plywood (kilograms)	175,758	38,406	257,171	83,704	45,298
Grand Total	—	4,985,552	—	1,411,189	-3,574,363

Table 6. IMPORT OF TIMBER AND WOOD

	1938		1939		Increase or Decrease (M¥)
	Volume (Cubic meters)	Value (M¥)	Volume (Cubic meters)	Value (M¥)	
Hardwood:					
Logs & Cants	6,926	271,194	11,844	875,725	604,531
Sawn	12,170	767,229	14,499	1,481,805	714,576
Iron wood, etc.	—	92,141	—	206,253	96,112
Others	—	163,349	—	180,831	17,482
Total	—	1,352,591	—	2,752,089	1,399,498
Softwood:					
Scaffolding Poles	42,079	1,322,667	108,537	4,807,232	3,484,565
Mine Pillars	124,759	1,653,177	31,959	567,397	-1,085,780
Other logs & Cants	61,617	2,255,641	147,351	7,643,414	5,387,773
Sawn	155,921	7,421,406	742,676	46,251,381	38,829,975
Total incl. Others	—	12,816,231	—	59,450,255	46,634,024
Railway Sleeper	9,581	242,039	52,423	2,531,661	2,289,622
Plywood (m. tons)	6,914	1,806,081	15,304	5,306,088	3,500,007
Flooring	—	412,754	—	1,145,366	732,612
Grand Total	—	16,599,772	—	73,240,602	56,640,830

The timber industry, as interpreted in indices, reveals a striking advance in prices. Timber output has been more than doubled in the years from 1934 to 1938, inclusive, as the following table shows:

Table 7. INDICE OF TIMBER INDUSTRY

	Timber Wholesale price (Hsinking)	Output	Construction	
			Consumption	contract amount
1934	86.0	90.7	73.0	114.0
1935	84.7	103.7	99.7	110.4
1936	100.0	100.0	100.0	100.0
1937	133.9	151.6	150.2	119.3
1938	203.1	199.7	172.8	215.8
1939	251.1	—	—	—

The number and location of forestry offices in Manchoukuo is given below:

Table 8. FORESTRY OFFICES IN MANCHOUKUO
(Oct., 1937)

Locality		Locality	
Chaoyangchen ..	Feungtien Province	Muling	Mutankiang ..
Antung	Antung ..	Poli	Sankiang ..
Tunghua	Tunghwa ..	Fulin	" ..
Funsung	" ..	Tangyuan	" ..
Tumen	Chientao ..	Chiamassu	" ..
Hunchun	" ..	Tungho	" ..
Tunhua	Kirin ..	Siuhua	Peh-an ..
Huatien	" ..	Pehan	Lungkiang ..
Kirin	" ..	Chalantun	" ..
Wuchang	Pinkiang ..	Tsitsihar	" ..
Harbin	" ..	Heiho	" ..
Mutankiang ...	Mutankiang ..	Sanho	Hsingan ..
Lungtsing	" ..	Halunaerhshau ..	" ..
Imienpo	" ..	Hailar	" ..
Ningan	" ..	Chengteh	Jehol ..

Pulp Industry

In view of the heavy demand for pulp for paper manufacturing as well as for rayon and other products, the government has been encouraging the pulp industry. There were in 1940 five large pulp companies with an aggregate nominal capital of ¥50,000,000 and with an annual production capacity of 72,000 metric tons. These companies were affiliated with the Japanese interests of Oji, Terada, Kawanishi and Ohkawa. The Government is reported to have allotted to each company an annual production quota of 10,000 metric tons in 1938 and 15,000 metric tons in the succeeding years.

There are many kinds of timber used for the manufacture of pulp, but by far the most extensively used are acerose trees, chiefly ezomatsu (*Picea ajanensis*) and todomatsu (*Abies sachalinensis*). In Manchuria the Chinese cypress and white firs (*Abies firma*) are especially used.

The Department of Industry of the Manchoukuo Government in 1935 estimated the volume of acerose trees at 5,300 million koku (1 koku equalling 120 board feet) and that of latifoliate trees at 8,000 million koku. Taking these figures as the basis for compu-

tation, it is deduced, in considering the Government's forestry preservation policy, that about 140 million koku (in weight 3.5 koku is equal to 1 metric ton) of pulp material can be obtained from the total amount of ezomatsu and todomatsu in the country, estimated at 570 million koku. If 70 years is regarded as the generation period (the period which a tree requires to attain sufficient growth to be used as pulp material) it is estimated that annual production of pulp material from ezomatsu and todomatsu actually possible will be 2,050,000 koku. Even if 60 years is considered as the generation period, the possible amount would be only 2,390,000 koku or 670,000 tons. Thus in order to meet the shortage of over 420,000 tons in Japan, other trees besides the foregoing ezomatsu and todomatsu will have to be utilized for pulp manufacturing.

Besides wood pulp, reeds growing on the banks of the Liao, Yalu and Sungari rivers and in the Takushan district, Antung Province, have in recent times come to be used as raw material for the pulp industry. The pioneer in this field is the Kangte Reed Pulp Company in Yingkow, established by the Kanegafuchi Spinning Company of Japan in 1936. Excellent pulp is being manufactured from reeds by this company. A process of manufacturing staple fibre from soya bean stalks has also been discovered and is being employed by the Manchuria Bean Stalk-Pulp Company, which was founded at Kaiyuan in September, 1937.

From the standpoint of management, the pulp industry in Manchuria is fairly inferior to that in Karafuto because the high cost of wood, the poor quality of materials and transportation inconveniences make it considerably difficult to place the Manchuria industry on a paying basis. Moreover, such factors as electric power, water utilization, transportation facilities and chemical materials are by no means favourable to the industry.

Table 9. PULP COMPANIES IN MANCHOUKUO AND KWANTUNG
(End of Sept. 1940)

	Nominal Capital (MY1,000)	Capacity per year (M. tons)	Affiliation	Factory
Yalu Seishi Pulp Co.	5,000	18,000	Oji Interest	Antung
Manchuria Pulp Co.	10,000	15,000	Mitsubishi ..	Hualin
Nichi-Man Pulp Co.	10,000	15,000	Oji ..	Tunhua

	Nominal Capital (MY1,000)	Capacity per year (M. tons)	Affiliation	Factory
Toyo Pulp Co.	10,000	15,000	Kawanishi "	Tungchingcheng
Toho Pulp Ind. Co.	30,000	15,000	Kanebo "	Kaishantun
Chinchow Pulp Co.	30,000	15,000	Oji "	Chinchow
Kangteh Reed Pulp Co. ...	5,000	15,000	—	Yingkow
Manchou Bean Pulp Co.	10,000	15,000	Nomura "	Fengtien
Total	110,000	138,000	—	—

Forests in Kwantung Province

On the establishment of the Government of Kwantung, the problem of reforestation was immediately taken up, and as an initial step, nursery farms were established at Port Arthur, Dairen and Chinchow with an aggregate area of 400 chobu or 1,000 acres, for the purpose of supplying saplings for the work undertaken by the Government. In order to encourage the general public in this useful undertaking, the Government rented forest land, free of charge, to those desirous of growing timber, supplying seeds and young trees gratis. Moreover, regulations have also been issued for the protection of forests. These measures have had the desired effect, and, with the increasing interest taken by the public in the matter of reforestation, many nursery farms owned by villagers have been established.

Table 10. AREA OF FORESTS IN KWANTUNG BY OWNERSHIP
(Unit in Cho; 1 Cho=2.45 acres)

	Area of Forest			Area of Afforestation			
	Government	Private	Total	Gov't	Public	Private	Total
1932	78,613	15,523	94,136	301	760	952	2,014
1933	78,701	15,455	94,146	303	702	685	1,690
1934	78,138	15,744	93,883	276	493	724	1,494
1935	72,457	20,422	92,878	111	237	648	996
1936	66,535	23,899	90,434	49	241	429	718
1937	59,219	30,424	89,643	256	167	383	806
1938	58,209	30,394	88,593	208	195	345	748
1938:							
Dairen	5,437	37	5,474	78	—	17	95
Port Arthur ..	25,700	7,201	32,901	29	23	3	55
Chinchow	13,414	6,900	20,104	101	11	26	138
Pulantien ...	8,921	12,041	20,962	—	145	189	334
Pitsuwo	4,737	4,215	8,952	—	16	110	126

CHAPTER XVIII FISHERIES

Being a continental nation, Manchoukuo is not so much favored by the sea and its coast-line extends only less than 900 kilometers. However, it has many great rivers of world-fame including the Amur, Sungari, Nonni, Ussuri and Liao Rivers. The number of rivers which have a flowing course of over 300 kilometers reaches forty in number, and in the valleys of these rivers there lie many large lakes. It is a fact that the expanse of river waters in Manchoukuo is always mentioned together with the Yangtze valley in China.

Following are detailed figures showing the length of the important rivers in Manchoukuo, together with the water expanse of the leading lakes and the length of the coast line:

Table 1. LENGTH OF IMPORTANT RIVERS

	Main stream (kms.)	Tributaries (kms.)
Sungari	1,662	3,959
Nonni	1,080	3,544
Argun	1,423	3,294
Amur	1,810	1,882
Ussuri	900	1,615
Tumen	521	575
Suifen	424	461
Liao	1,313	3,347
Luan	884	1,565
Yalu	790	750

Water expanse of leading lakes are as follows:

Table 2. WATER EXPANSE OF LEADING LAKES

	Sq. kms.
Hanka	4,500
Dalai-nor	1,595
Buir-nor	568
Tali-nor	386
Pilteng	180

The length of the coast line in kilometers is as follows:

Gulf of Pechili, 648; Yellow Sea, 261.

In view of the foregoing more attention is paid to the fishery products from fresh water than from the sea, although marine products can by no means be slighted. Both the Gulf of Pechili and the Yellow Sea are shallow waters along the coast line of Manchuria, having much mud poured out by rivers and abounding in organisms. Accordingly many fish come here to feed or spawn, which makes the waters an excellent fishing ground in spite of the small area.

The operations for catching sea fish are conducted by taking advantage of the ebbs and flows, using stationary facilities such as nets and weirs which are found everywhere along the coast. Fishing further off and deep-sea fishery are not developed for various reasons, including the absence of good home bases for such operations and the lack of resources and technique on the part of the fishermen of the country. Even today the Manchoukuoan fishermen are almost entirely without motorized vessels, leaving operations to be monopolized by the fishermen from the Kwantung Leased Territory, Chosen, Japan Proper and Shantung Province in China. When the construction work on the Hulutao harbor is completed, however, adequate home bases for deep-sea fishing operations by Manchoukuoans should be established.

On the other hand, the numerous rivers in the country have an exceedingly wide expanse of water which contains a great deal of nourishment for keeping fish. These rivers already rank with the noted rivers of Siberia as fishing grounds. In this connection it must be noted that while only the Dalai-nor system, the Nonni River and a part of the Sungari River have been developed as fishing grounds, the greater part of the fishery resources of the country has been left unexploited for such reasons as poor means of communications, imperfect facilities for the maintenance of peace and order and lack of other facilities. But peace and order are now well maintained and the communications system is being steadily improved and expanded.

Fishing Equipment

Representative methods for catching river fish in Manchoukuo consists of great nets, weirs and pingtsaotzes. The operation

of drag nets reaching 1,000 meters in length, which are dropped through broken ice of about one meter thick, handled by many horses or over 100 persons working together, is certainly an impressive sight in Manchoukuo in winter. The utilization of weirs and pingtsaotzes are both interesting fishing methods peculiar to the rivers in North Manchuria which take advantage of the rise and fall of the rivers. The operation of weirs takes nearly one whole year to complete, the preparations starting in the spring, while the fishing is conducted in the winter, and this method strongly reflects the easy-going habits of the continental people.

A feature of river fishing lies in the fact that the operations are conducted during the season of intense cold. The fish thus caught immediately become frozen, and in a land like Manchuria, where means of communications, storage and transportation facilities are still imperfect, climatic conditions favor the fishermen. Once winter set in, the market increases in activity and shipments of fish start moving. Time was when carp caught in the Dalai-nor Lake were shipped as far as Moscow and Berlin, and even now fishery products of Manchoukuo are found on the market in North China.

It has been ascertained that there are 136 varieties of fish and shell fish in Manchoukuo's rivers. Those belonging to the family of "Cyprinus Carpio" account for 80 per cent, followed by those belonging to the "Salmonidae." Many of these are of great economic value.

The principal sea fish as involved in the Manchoukuo industry comprise the lobster, shrimp, guchi (Huang Hua Yu), hair-tail, mackerel, sawara (*Seombremorus Niponium*) and oysters. The Gulf of Pechili yields guchi (Huang Hua Yu), lobster, shrimp, gray mullet and hira (*Ilisha Elongata*).

The production of fish and shell fish is estimated at 109,000 metric tons, valued at 10,000,000 yuan annually, including 42,000 metric tons of sea products valued at 3,000,000 yuan and 67,000 metric tons of river products valued at 7,000,000 yuan. These figures represent a three fold increase in either category as compared with statistics compiled before the foundation of the new Empire of Manchoukuo.

Statistics on fishery are subjoined:

Table 3. NO. OF FISHING HOUSEHOLDS AND POPULATION IN KWANTUNG PROVINCE

Year	Permanently Occupied					
	Japanese		Manchoukuoans		Total	
	No. of households	Population	No. of households	Population	No. of households	Population
1929	82	141	5,694	19,664	5,776	19,805
1930	89	328	5,648	14,583	5,737	14,911
1931	87	372	5,625	14,592	5,712	14,964
1932	95	419	5,299	12,108	5,394	12,527
1933	114	450	4,921	13,065	5,035	13,515
1934	110	449	4,891	12,942	5,001	13,391
1935	105	472	4,749	12,955	4,854	13,427
1936	106	523	4,541	12,604	4,647	13,127
1937	174	803	4,272	11,469	4,446	12,272
1938	161	998	3,460	11,159	3,621	12,157

Year	Partially Occupied					
	Japanese		Manchoukuoans		Total	
	No. of households	Population	No. of households	Population	No. of households	Population
1929	9	15	3,555	10,246	3,564	10,261
1930	27	38	3,795	9,375	3,822	9,413
1931	30	29	3,757	8,413	3,787	8,442
1932	24	24	2,963	5,715	2,987	5,739
1933	20	27	4,012	9,614	4,032	9,641
1934	20	22	3,901	9,925	3,921	9,947
1935	12	12	3,895	9,983	3,907	9,995
1936	23	23	4,151	10,426	4,174	10,449
1937	26	42	4,085	10,669	4,111	10,711
1938	26	76	4,052	13,113	4,078	13,189

Table 4. FISHERY CATCH CLASSIFIED (1937)

	Catch	
	Qty. (1,000 catties)	Value (M¥1,000)
Nonni River	55,000	3,300
Sungari River main stream	30,000	2,000
Dalai-nor System	9,000	810
Liao River	4,200	180
Ussuri River	3,500	180
Second Sungari River	2,500	200
Amur River (including Argun River)	2,500	130
Yalu River	2,500	130
Pilteng Lake	300	30

Dalai-nor	300	30
Hanka Lake	250	20
Total	110,050	7,010

Table 5. NO. OF FISHING CRAFTS IN KWANTUNG PROVINCE

Year	Junks	Sampans	Japanese type	Foreign type	With engines	Transport boats	Total
1929	957	4,999	195	—	82	49	6,282
1930	1,093	4,791	161	1	115	68	6,229
1931	1,092	4,679	179	—	133	72	6,155
1932	965	4,839	142	—	150	64	6,160
1933	911	4,898	131	—	162	69	6,171
1934	875	4,931	115	—	167	59	6,147
1935	858	4,823	106	—	170	149	6,106
1936	854	4,719	115	—	176	113	5,977
1937	753	4,550	80	—	189	253	5,825
1938		4,765			247	288	5,300

Table 6. MARINE CATCHES IN KWANTUNG PROVINCE

(Unit: Volume in 1,000 Kwan; 1 Kwan=3.75 kilograms; Value in M¥1,000)

Year	Sea-bream		Cod		Hair-tail		Guchi		Scomberomorus		Halibut	
	Vol.	Val.	Vol.	Val.	Vol.	Val.	Vol.	Val.	Vol.	Val.	Vol.	Val.
1932	797	183	2,622	734	917	350	2,445	748	386	357	1,595	440
1934	30	169	1,399	395	1,340	437	3,492	1,176	365	361	1,424	598
1935	62	229	1,329	381	1,223	395	3,379	1,292	375	358	1,938	755
1936	45	162	1,832	507	1,100	338	5,015	1,716	282	319	2,298	796
1937	30	141	1,916	461	1,378	480	5,259	2,110	174	260	2,104	797
1938	—	177	—	870	—	607	—	2,512	—	325	—	947

(Continued)

	Lateola-brax		Batoidei		Lepido-trigla*		Sea-Cucumber		Prawn & Shrimp		Total incl. Others Value
	Vol.	Val.	Vol.	Val.	Vol.	Val.	Vol.	Val.	Vol.	Val.	
1932	54	46	523	101	448	94	132	103	334	407	4,104
1934	53	63	755	124	342	118	115	115	404	662	5,016
1935	68	78	881	156	580	161	118	121	286	596	5,519
1936	68	75	1,079	165	625	148	133	139	260	538	5,783
1937	49	66	968	152	620	159	185	150	568	1,547	7,462
1938	—	99	—	151	—	215	—	69	—	1,914	9,245

Note: * Includes gurnet.

Table 7. AMOUNT AND VALUE OF MARINE MANUFACTURES IN KWANTUNG PROVINCE

Year	Preserved and dried articles		Finished articles		Total	
	Quantity (Kwan)	Value (Yen)	Quantity (Kwan)	Value (Yen)	Quantity (Kwan)	Value (Yen)
1929	1,657,245	1,141,895	99,351	192,343	1,774,596	1,334,238
1930	1,623,218	1,151,380	84,790	188,194	1,708,008	1,339,574
1931	1,562,667	911,492	86,783	189,839	1,649,450	1,101,331
1932	1,500,213	959,782	85,074	201,654	1,585,287	1,161,436
1933	1,588,508	965,482	85,907	214,942	1,674,415	1,180,424
1934	914,741	798,130	88,876	223,074	1,003,617	1,021,204
1935	1,056,159	667,429	87,224	210,010	1,143,383	877,439
1936	911,643	625,092	92,491	225,127	1,004,134	850,217
1937	891,573	576,581	50,172	114,912	941,745	691,493
1938	—	664,306	—	540,725	—	1,205,031

Table 8. EXPORTS & IMPORTS OF MARINE PRODUCTS

Year	Import		Export		Excess of Import		%	
	Quantity (Piculs)	Value (Hk. Tls.)	Quantity (Piculs)	Value (Hk. Tls.)	Quantity (Piculs)	Value (Hk. Tls.)	Import	Export
1928	497,105	4,501,101	105,763	720,208	391,342	3,780,893	86.2	13.8
1929	489,637	4,403,861	160,626	859,229	239,011	3,544,632	83.7	16.3
1930	375,284	4,415,827	107,413	725,010	267,871	3,690,817	85.9	14.1
1931	158,228	2,974,735	138,823	1,065,842	19,405	1,908,893	73.6	26.4
1932	324,297	7,394,836*	99,826	1,947,744*	224,471	5,447,092*	79.1	20.9
1933	460,411	8,169,789*	122,839	480,780*	337,572	7,689,009*	94.9	5.1
1934	401,315	8,237,951*	64,686	406,173*	336,629	7,831,778*	95.3	4.7
1935	381,259	8,552,935*	71,556	543,429*	309,703	8,009,506*	94.0	6.0
1936	—	12,004,674*	—	356,634*	—	11,648,040*	97.3	2.7
1937	—	20,584,738*	—	422,192*	—	20,162,546*	97.9	2.1
1938	—	17,136,000*	—	815,567*	—	16,321,000*	95.2	4.8
1939	—	47,858,000*	—	1,429,353*	—	46,429,000*	97.1	2.9

Note: * represent MY

Salt

Salt also much be mentioned here as an important item of the marine resources of Manchoukuo. In spite of the short coast line the country has numerous dry beaches containing salt fields, and as weather conditions are also favorable for the manufacture of salt it is considered a very promising salt-producing district like that of the Kwantung Leased Territory. The production of salt in Manchoukuo for the year 1938 amounted to 222,613 metric tons

while Kwantung accounted for 424,342 metric tons.

Table 9. SALT PRODUCTION IN MANCHURIA

	Manchoukuo		Kwantung		Total	
	Area (Cho)	Output (m. tons)	Area (Cho)	Output (m. tons)	Area (Cho)	Output (m. tons)
1934	8,295	168,268	7,080	249,367	15,375	418,135
1935	14,643	396,310	8,653	505,809	23,296	902,119
1936	14,678	372,711	9,024	413,084	23,702	785,385
1937	13,879	334,549	9,082	429,188	22,961	763,737
1938	13,984	222,613	9,082	424,342	23,066	646,955

When the operation of all existing salt fields now under suspension is resumed, and efforts for improvement of the quality realized, it may be expected that annual production will readily exceed the 423,000 metric ton mark. Further, if the dry beaches scattered along the coast line of the country are all developed as salt fields, the production of salt will no doubt be increased several times. At the same time, increasing demand for industrial salt commensurate with expansion of industry in Japan and Manchoukuo will facilitate development of salt recovery and refining in the new empire.

Table 10. DEMAND AND SUPPLY OF SALT

(Unit: M. tons)

(A) Manchoukuo

	Government Sale	Commercial Sale	Export of Industrial		Loss	Carried to following year	Total
			Salt	Others			
1934	74,956	126,543	98,533	4,931	18,870	302,796	323,833
1935	85,210	120,280	75,280	3,578	17,471	396,609	302,497
1936	99,197	155,234	110,747	4,998	41,968	356,767	412,144
1937	—	273,372	115,000	—	—	235,214	388,372
1938	—	325,808	70,386	—	—	—	—

(B) Kwantung

	Export				Consumption	Carried to following year	Total incl. others
	Japanese monopoly	Industrial use	Chosen	Karafuto			
1934	55,502	103,675	71,675	19,498	19,393	—	269,792
1935	48,512	129,993	35,351	23,542	23,692	326,563	261,997
1936	47,891	195,768	31,786	17,366	24,764	449,205	331,694
1937	47,016	380,666	56,978	26,999	47,136	250,879	561,963
1938	137,899	163,566	62,961	32,951	101,635	174,123	502,042

The Manchuria Salt Industry Company. The Manchuria Salt Industry Company, a joint Manchoukuo-Japan enterprise, was organized on April 27, 1936, and under the supervision of the Department of Industry, the company is engaged exclusively in the production, sale and exportation of Manchurian salt. The Japanese interests investing in the company include: Oriental Development Co., South Manchuria Railway Co., Dai-Nippon Salt Industry Co., Tokuyama Soda Co., Asahi Glass Mfg. Co., Japan Soda and the Bleaching Powder Manufacturers' Association.

According to the Company's program extending over eight years, the area of the company's salt fields in Manchoukuo will be expanded to 20,574 hectares and annual production will be raised to 847,100 tons. Including the salt produced by private enterprises, estimated at 470,000 tons, the total output in Manchoukuo (excluding the Kwantung Territory with an annual production of 600,000 tons) will reach 1,323,869 tons yearly. Of this amount, 720,000 tons are expected to be exported to Japan.

Table 11. SALT PRODUCTION PROGRAM

(Unit: 1,000 metric tons)

	By Manchuria Salt Ind. Co.		Total
	Other plants		
1939	0.2	222.3	222.5
1940	14.1	392.7	406.7
1941	87.6	416.4	504.0
1942	232.1	440.9	673.0
1943	451.2	476.3	927.6
1944	668.0	476.7	1,144.7
1945	808.9	476.7	1,285.6
1946	847.1	476.7	1,323.9

CHAPTER XIX

MINING

Introductory

The abundance of mineral resources in Manchuria is well known both at home and abroad, but there are still many deposits the estimates of whose economic value must await the outcome of careful investigations to be conducted in the future. The useful mineral resources ascertained so far are gold (placer), iron and lead among the metallic minerals, and coal, magnesite, fire clay and oil shale among the non-metallic minerals. These deposits are found in abundance and constitute the principal mineral resources of the country. The estimated deposits of the principal minerals, according to investigations conducted so far and the production of minerals in recent years are as follow:

Table 1. MINERAL RESOURCES (1938)

	Metric tons		Metric tons
Coal	11,437,265,000	Fire Clay	100,000,000
Iron Ore	1,513,790,000	Alumina Shale	25,318,000
Oil Shale	7,628,000,000	Gold Ore (kgs.)	6,000,000
Magnesite	5,000,000,000		

Table 2. OUTPUT OF PRINCIPAL MINERALS

	Iron Ore (1,000 m. tons)	Sulphuric Iron Ore (m. tons)	Gold (Kg.)	Lead Ore (m. tons)	Copper Ore (m. tons)	Manganese Ore (m. tons)	Coal (1,000 m. tons)	Oil Shale (m. tons)
1926	1,117	2,756	1,674	2,823	495	245	7,855	—
1930	832	3,028	1,478	—	840	609	10,159	981
1934	1,105	7,770	464	269	—	653	10,433	2,106
1935	1,463	9,110	1,887	1,490	—	600	11,056	3,437
1936	1,934	5,748	3,657	16,713	—	355	11,646	3,648

	Magnesite (m. tons)	Soap- stone (m. tons)	Dolomite (m. tons)	Lime- stone (m. tons)	Asbestos (m. tons)	Fire-clay (m. tons)	Silica (m. tons)	Felspar (m. tons)
1926	20,000	34,906	83,336	270,333	63	37,781	19,724	667
1930	29,016	25,726	116,925	688,489	110	53,664	20,000	500
1934	78,752	75,360	166,758	655,647	119	137,471	154,930	3,979
1935	156,586	70,572	171,033	855,267	70	181,730	148,754	29,874
1936	336,853	82,878	283,908	1,262,154	69	164,380	43,877	14,106

The Coal Mining Industry

Quantitative production of coals is indispensable for the realization of the complete self-supply of fuel, which is one of the fundamental policies of Manchoukuo. As yet, however, the total amount secreted in the vast area of 1,300,000 square kilometres of continental Manchoukuo is undetermined, but surveys to the present have revealed that supplies must reach almost astronomical figures.

Prior to the Manchurian Incident of 1931, an extensive geological survey was impossible on account of the poor transportation facilities and unstable internal political conditions, but according to the report published by the Geological Research Institute of the South Manchuria Railway Company in 1932, the volume of coal deposits in Manchuria was estimated at 4,800 million metric tons. Later investigations by the Manchuria Coal Mining Company and other bodies, however, increased this figure to over 20,000 million metric tons.

This enormous increase was due mainly to the discovery of large coal-fields at Fuhsin, Hokang, Titao and Chalainor. The deposits in the Fuhsin coal-field, for instance, were formerly estimated at 1,100 million metric tons, with a coal layer 20 metres deep, but the experimental borings of the Manchuria Coal Mining Company have proved the existence of another three layers, the aggregate depth of which, together with the previously known layer, reached 100 metres, and necessitated a revision of the total volume of deposits in the field from 1,100 million to 4,000 million metric tons.

The area covered by geological investigations up to the present is yet very limited, the vast area of the country still being left unsurveyed, and the amount of deposits yet hidden from human knowledge in the districts where the surveyors have not yet penetrated is still a matter for conjecture. It is hoped, however, that adequate reports will soon be available.

Distribution of Coal-fields

Coal veins in Manchoukuo may be divided into two by a line connecting Chihfeng at the south-western border of the country with Hokang in the north-eastern section as the demarcation. While

the south-eastern section has many coal-fields, the north-western section has but few, the explanation of such a sectional existence of the mines discovered being attributable to the fact that in the northwestern section there run from north to south the various ranges of the Great and Small Hsingan mountains, and the great masses of igneous rocks exposed to the weather allow the formation of coal-fields only in the narrow patches of land in between. The non-discovery of coal-fields in these practically unvisited wild mountainous regions can, then, be well understood. On the other hand, the southeastern section contains but few igneous rocks, and as man has inhabited the region in considerable numbers from olden times, the advance of culture with its consequent progress in traffic has made it opportune for eager entrepreneurs to seek out and develop the many excellent coal-fields in these districts.

Pointing out the important coal-fields according to the two geographical sections mentioned above, we may note in the south-eastern section, Fushun, Penhsihu, Yentai and Nihsintai among the old ones; and Hokang, Sanhsing, Titao, Chientao, Fuchou, Hsian, Tunghua, Pataohao, Fuhsin, Peipiao and Chihfeng among the newer ones which are either already operated or to be operated in the near future. On the other hand, the north-western section has only such coal-fields as the Chalainor, Kanho, Solun, Lupei and Linhsi, the first mentioned alone being operated at present. As a matter of fact, Japanese investigations in North Manchuria were hindered by the strong influence of the Russians prior to the Manchurian Incident. They were, however, able to extend their economic and industrial activities in the regions along the South Manchuria Railways in South Manchuria, though the general survey of the mines in the northwestern section was much delayed.

Table 3. PRINCIPAL COAL MINES

(A) Manchuria Colliery Co. Management

Mine	Location:	Kind:	Estimated Deposit (1,000 m. tons)
Fuhsin	Fengtien	Bituminous	4,000,000
Patakou	"	Anthracite	28,900
Hsian	"	Bituminous	270,000
Peipiao	Chinchow	"	203,000
Hekank	Sankiang	"	5,000,000
Titao	Tungan	"	380,000

(Continued) Mine:	Location:	Kind:	Estimated Deposit (1,000 m. tons)
Fuchow	Fengtien	Anthracite	6,930
Chalainor	Hsingan N.	"	3,980,000
Huolung	Chientao	Bituminous	70,000
Tienschihfu	Fengtien	"	167,000
Tungning	Mutankiang ...	"	21,500
Chengtzuho*	Tungan	"	355,000
Hongshan*	"	"	655,000
Shulan Office*	Kirin	—	478,000
Sansing "	Sankiang	—	334,000

(B) S.M.R. Management

Fushun	Fengtien	Bituminous	950,000
Chiaoho	Kirin	"	456,000
Yentai	Fengtien	"	40,000
Total incl. others.....			1,417,700

Note: * Mines not yet operating.

Table 4. ANALYSIS OF COAL CLASSIFIED

	Moisture %	Ash %	Volatile matter %	Fixed carbon %	Calories	Sulphur %
Fuhsin (1)	10.75	8.77	33.23	47.29	6,229	1.09
" (2)	6.95	7.45	35.75	49.85	6,907	0.60
Pataokou	12.65	10.35	33.54	43.45	5,685	2.54
Peipiao	1.74	15.23	31.53	51.50	6,849	0.65
Hekang	1.36	9.76	32.62	56.24	7,221	0.29
Titao	0.73	14.97	19.88	64.42	7,292	0.45
Tienschihfu	0.65	15.01	9.98	74.36	7,200	0.40
Huolung	8.16	12.27	33.41	46.16	6,014	1.28
Fuchow (1)	1.46	12.22	8.91	77.41	7,271	0.73
" (2)	1.21	14.93	9.82	74.04	7,100	2.76
Tungning	2.11	25.87	39.17	32.85	5,515	0.26
Hsian	4.29	10.18	36.13	49.40	6,493	0.60
Shulan Office ..	12.40	14.82	38.45	34.33	5,122	0.15
Chalainor	20.47	3.82	37.61	38.10	5,106	0.40

Geological Formation

The geological formation of Manchuria may be divided into two, taking North Latitude $42^{\circ} 15'$, which runs between Mukden and Tiehling, as the demarcation line. In the regions to the south of the line, which include the Liaotung Peninsula and Korea, the Palaeozoic stratum appears and the coal-fields belong to the Permian carboniferous period, causing great masses of anthracites

to be found in the Fuchow and Yentai fields and much high-grade bituminous coals in the Penhsihu and Tunghua fields. On the contrary, the regions to the north of the demarcation line expose the Mesozoic stratum and all the coal-fields at Hokang, Titao, Hsian, Fuhsin, Peipiao, Pataohao, Chihfeng and Chalainor mostly produce either bituminous coals or lignites. In the districts right along the demarcation line rocks which belong to the tertiary period of the Neozoic Age make their appearance in places, consequently the Fushun and Chientao coal-fields are full of bituminous or lignite coal-seams. In conclusion, it may be said that the coal-seams in Manchoukuo are mostly of bituminous coal created in the Palaeozoic and Mesozoic Ages of geological history, lignite seams coming next in quantity, while deposits of anthracites are found in comparatively few places.

The Manchuria Coal Mining Company

The Manchuria Coal Mining Company was established with the object of exploiting the rich coal-fields in the wide area of Manchoukuo and controlling, at the same time, the relations of supply and demand, thereby protecting the speculators eager to gain profits, and placing the coal mining industry in the country on such a footing that it may cooperate to the industrial development of the State and the consolidation of the Japan-Manchoukuo economic relations. The company came into being as a semi-governmental juridical body on May 7, 1934, in accordance with the provisions of Ordinance XII (The Manchuria Coal Mining Company Administration Act). On the organization of the Manchuria Industrial Development Corporation, it was put under the control of that Corporation in March, 1938. From the time of its establishment in 1934, it has been conducting extensive geological surveys in the new regions in search of coal-seams and increasing the production of coals. It has effected an expansion of its equipment and widened the realm of its activities, so that its present annual productive capacity reaches 5,500,000 metric tons, an output which is to be still further increased in the near future.

The coal-mining industry of the country had thus been developed in accordance with the Five-Year Industrial Plan, but before the first year of the execution of the plan had hardly been completed the China Incident broke out in 1937. This caused an

immense strain on the national resources of the country and the demand for coals was suddenly increased. In consequence, the programme for the expansion of the productive power of the Manchuria Coal Mining Company was accordingly revised, and the goal was placed at 18 million metric tons per annum by the end of 1941. The company is endeavouring to attain this goal by the fixed date by enlarging its production facilities, increasing annual output in the interim according to a proposed schedule.

In the first year of its establishment, the company recorded an annual production of only 1,500,000 metric tons, by operating the Fuchou, Pataohao, Sunkiawan, Hokang, Peipiao and Hsian coal-mines. But after its successful efforts in discovering new coal areas, the company began operations in the districts of Mishan and Titao and undertook the further responsibility of working the Chailinor coal mine in 1935. During the following year, it opened up the coal-fields at Fuhsin and began exploitations in the regions of Holung and Tienshihfu. In 1938 it established plants at Sunkiawan, Pataohao and Hsinchiu, and began operation of the coal-fields at Shulan, Tungning and Sanhsing, and in the Chengtzuhö and Pingyang area, effecting, at the same time, a radical reorganization of its own management in order better to fulfil its mission of supplying this important commodity in abundance to the ever-expanding industrial establishments in the country.

In its efforts to increase output by the fuller use of existing mines and the increased exploitation of new coalfields, the company was handicapped by a shortage in the supply of machinery and labour, to overcome which it had to increase its capital, in April, 1939, from 80 million yen to 200 million yen, all the debentures for the increased amount being taken up by the Manchuria Industrial Development Corporation.

Brief descriptions of the coal mines and fields operated by the Manchuria Coal Mining Company are given below.

Coal Mines Operated by the Manchuria Coal Mining Company

The Fuhsin Mining Plants. The coal-field operated by the Fuhsin Mining Plants is located in the district extending from Fuhsin-hsien to I-hsien in Chinchou Province. It covers a vast area of 70 kilometres from east to west and from eight to 20 kilo-

metres from north to south lying between Hsinchiu and Chinghomen, the estimated amount of coal deposits in the field being over 4,000 million metric tons. Of the total amount of coals to be produced by the Manchuria Coal Mining Company under the revised Five-Year Industrial Plan one-fourth is to come from this coal-field. The coals produced are mostly jet-black bituminous coals with a greasy lustre. Their nature are very similar to Fushun coals. Containing but a small amount of ash and sulphur, they are a good fuel for locomotives, ships and factory furnaces. The headquarters of the Fuhsin Mining Plants are located at Haichou in the centre of the coal-field, with subordinate plants at Hsinchiu, Sunkiawan, Wulung and Taiping, and branch offices at Kaote and Pingan. The Pataohao coal-mining plant is also under its control.

Hsian Coal Mine. The Hsian coal mine is situated at a point seven kilometres from Hsian station on the Ping-Mei railway line in Fengtien Province and four kilometres north of Hsian-hsien. Coal deposits in the mine are estimated at 270 million metric tons. It is one of the earliest mines operated by the Manchuria Coal Mining Company and is the next in importance to the Fuhsin coal-field in the production of coals required by the Five-Year Industrial Plan.

Peipiao Coal Mine. The Peipiao coal mine is situated at the terminus of the Peipiao branch line from the junction of Chinlingszu on the Chin-Ku railway line in Chinchou Province. The distance from Chin-hsien to the mine is 113 kilometres, from Mukden 349 kilometres, from Hulutao 178 kilometres, and from Hopei Province in China 268 kilometres to the east. The amount of coal deposits is estimated at 200 million metric tons of good bituminous or soft coals. Coals suitable for caking are found in some parts of the seams.

Hokang Coal Mine. The Hokang coal mine is at Tang-yuan-hsien, in Sankiang Province. In July, 1937, the shares held by the Manchoukuo Government were transferred to the Manchuria Coal Mining Company and the right of coal mining there was accordingly ceded to the company. The estimated deposits reach over 5,000 million metric tons of excellent bituminous coals, jet-black and caking well. The annual output is next in importance to Fuhsin.

sin and Hsian, and its future increased output would seem to be assured.

Mishan Coal-field. The Titao coal mine is situated at a point five kilometres to the south-west of Titao station on the Hulin railway line, at Mishan-hsien in Tungan Province. The coals produced there are good bituminous caking-coals, well fitted for the manufacture of iron. The large coal-field including the Chengtzuhoh and Hsingshan coal mines, which are situated in the neighbourhood of the Titao coal mine, is commonly called the Mishan coal-field. The total amount of deposits of these mines is estimated at approximately 1,400 million metric tons.

The Fuchou coal-field at Wuhutsui of Fuh-hsien near Kwantung Province produces good anthracites. The Chalainor coal-field, situated at a point three kilometres to the west of the Chalainor station on the Harbin-Manchuli railway line in North Manchoukuo, has an estimated deposit of coals of nearly 4,000 million metric tons. These coal-fields were long known, though it was only after their coming into the hands of the Manchuria Coal Mining Company that any extensive mining was commenced.

In addition to the coal-fields mentioned in the foregoing paragraphs, there are still others at Holung in Chientao Province, at Tienshihfu in Fengtien Province and at Tungning in Mutankiang Province, all managed by the Manchuria Coal Mining Company. The coal-fields at Sanhsing in Sankiang Province are still under survey, together with the coal-fields at Chengtzuhoh and Hsingshan, but preliminary reports are very promising.

The Shulan coal-field in Kirin Province, which has some 500 million ton deposits, was first exploited by the Manchuria Coal Mining Company. But it was later so arranged as to supply the output of this field to the artificial petroleum manufacturing industry in Kirin, and on July 26, 1939, the Shulan Coal Mining Company was established with a capital of ¥10,000,000, jointly raised by the Manchuria Coal Mining Company, the Noguchi concern and the Manchoukuo Government. The mines in this field are at present the source of supply of material for the manufacture of substitute liquid fuel.

Besides, as subsidiaries under the Manchuria Coal Mining Company there are various enterprises such as the Yingchengtzu Coal Mining Company in Kirin Province, the Hunchun Coal Min-

ing Company in Chientao Province and the Shansungkang Coal Mining Company in Tunghua Province. Mention must also be made of the Manchuria Coal Mining Stakes Company at Hsinking which carries on the business of the manufacture and sale of stakes, telegraph poles and lumbers.

The Tungpientao Development Company

There lies, in the south-eastern section of Manchoukuo, in the wide area of Tunghua Province commonly called "Tungpientao," a rich store of minerals, the responsibility for exploiting which has been placed in the hands of the Tungpientao Development Company.

The company was established on September 14, 1938, with a capital of ¥30,000,000, as a subsidiary company of the Manchuria Industrial Development Corporation, and was granted special privileges by the Manchoukuo Government. The company plays an important role in the heavy industrial activities of the mother Corporation, having been established with the purposes of mining and supplying a large volume of iron ores, coals and other materials for the manufacture of iron, from the deposits in Tunghua Province, in compliance with the unlimited demand by Manchoukuo and Japan, and, at the same time, to give employment to and better the conditions of the poverty-ridden inhabitants in the province. The work of the company will, with the advance in its exploitation activities, soon be extended to the manufacture and sale of pig-iron and iron ingots.

The existence of the Tungpientao region was almost forgotten during the time of the old régimes, secluded as it was in the remote south-eastern corner of Manchuria, and cut off from the light of civilization, allowing no entrance to surveyors on account of its meagre traffic facilities and unsettled social conditions. Things, however, have been much improved since the establishment of the new State, Manchoukuo, in 1932, and an extensive survey has been conducted by various scientific groups. The result of these surveys within but the one year of 1937-38 was astonishing. Iron ore deposits were discovered in the districts of Talitzukou, Chitakou and Laoling, coal deposits at such places as Tiehchangtzu, Wutaokiang Pataokiang, Yentungkou, deposits of materials for the manufacture of iron such as limestone and fire-proof clay at

Talitzukou, deposits of manganese iron ores at Chitaokou, and highly caking coal deposits at Yentungkou and Tiehchangtzu. All of these minerals are of good quality and are found in great quantities.

The amount of coal deposits in Tungpientao is estimated at 200 million metric tons, considering only those which have been discovered up to the present at Tiehchangtzu, Wutaokiang, Pataokiang and Yentungkou.

Coal Deposits in Tungpientao

Tiehchangtzu Coal Mine. The Tiehchangtzu coal mine is located at a point 25 kilometres to the south-east of Tunghua-hsien and in the third section of the Hsien. The coal-seams spread over a vast area of 450 square kilometres with a length of approximately 55 kilometres and a width of about eight kilometres. The coal is a good coking material for factory purposes. The estimated amount of deposits is about 40 million metric tons, but the survey is yet unfinished and more seams will in all probability be found later. This estimate will then, of course, have to be increased.

Wutaokiang Coal Mine. The Wutaokiang coal mine situated a little north-east of the Tiehchangtzu mine is also under investigation and the present estimate of more than 100 million metric tons is expected to be increased as the survey progresses.

Yentungkou Coal Mine. This mine has about 30 million metric tons of a highly caking coal which may be used for making coke to feed iron furnaces. The estimated amount of deposits is also expected to increase on the completion of the survey.

Some millions more tons are expected to be discovered at Tantungkou, Tsiaotungkou and Chatzuyao. A complete investigation of these mines is being made by the branch survey office of the company at Fusung in the northern district of the province. Rich coal-fields have been also found at Wankou, Sungshuchen and Shuitungkou, which are in the region to the north of Linkiang, their aggregate deposits of coal reaching 30 million metric tons, according to present estimates. The survey here is also not yet completed.

The Tungpientao Development Company, which acquired the rights of management of the coal plants at Tiehchangtzu and Wu-

taokiang transferred from the Manchuria Coal Mining Company on its establishment in 1938, is making great endeavours for the expansion of business and the construction of plants in new mines; and, in April, 1939, it commenced working the plants at Yentungkou and Pataokiang. With the completion of the construction of the Tunghua Office for the systematic management of these coal mines and the two iron plants at Talitzukou and Chitaokou, the company is taking on a large number of workers, cutting galleries and adits in new mines, carrying out extensive surveys for the discovery of new seams or veins, and employing new methods of mining. Provided it can be completely supplied in the near future with the necessary machinery and materials for mining, the entire plant of this company will soon be working at high pressure. According to the expansion programme of the company, the mining and sale of iron ores and coals deposited in Tunghua Province and the manufacture and sale of iron are to be commenced in the first period, and an iron foundry with an annual productive capacity of 500,000 metric tons is to be constructed for the manufacture of pig-iron, with all necessary equipment installed by the end of the second period. The part of the programme to be completed in the 1939 fiscal year includes the mining of coals to the amount of 150,000 metric tons in the Tiehchangtzu coal-field, 150,000 metric tons at Wutaokiang, 50,000 metric tons at Pataokiang and 50,000 metric tons at Yentungkou, making a total of 400,000 metric tons; the mining of iron ores to the total of 200,000 metric tons at Talitzukou and 150,000 metric tons at Chitaokou, making a total of 350,000 metric tons; and a gigantic construction plan in which transformer stations, machine-manufacturing factories and other facilities are to be erected with various mining plants, while foundations for the establishment of iron mills, coke manufacturing and coal cleaning plants, the central electric station and the central machine-manufacturing factory will be laid at Erhtaokiang. Besides, preparations for the establishment of a general laboratory for scientific research on subjects related to the mining and manufacturing industries are to be completed within the fiscal year under review.

The coal-field, which extends from east to west over the region near Penhsihu station on the Antung-Mukden railway line, covers a large area of some 1,100 acres, and seems to have been opened originally about the same time as Fushun and Yentai. Of this

IRON AND STEEL MANUFACTURING INDUSTRY

Introductory

The production of iron, equally important with that of coals, forms the other factor in the policy for the industrial development of Manchoukuo. The iron ore deposits are widely distributed all over South Manchuria, and contain, among many others, the Anshan iron mine, which lies along the Antung-Mukden railway line, and that in Tungpientao.

The immense haematite deposits discovered in the vicinity of Talitzukou in Tungpientao are said to be among the best in the world both in quality and quantity.

In North Manchuria only small iron mines have been discovered, but they are so far all unoperated.

Generally speaking, the iron ores produced in Manchoukuo are haematite or magnetite. Formerly, judging from the poor mines in existence prior to the birth of the new State, it was thought that deposits of rich iron ores were scarce, but the discovery of the excellent mines in Tungpientao has proved the falsity of this. The figures already given by the surveyors aggregate 130 million metric tons of rich iron deposits, with 1,660 million metric tons of poorer quality, most of the best material for iron manufacture being in Tungpientao. The immensity of the possible output of iron in this region has proved very encouraging to all those who are sparing no efforts to strengthen national defence and the manufacturing industries in Manchoukuo. The earliest operated among the iron mines in the country were the Anshan and Miaoerhkou of Penhsihu.

Table 7. PRINCIPAL IRON DEPOSITS BY REGIONS

Region	Species	Deposits (1,000 m. tons)		Iron contents
		Rich	Lean	
Anshan	Hematite	Rich	1,300	50-60%
	Magnetite	Rich	3,000	60-68%
Kungehuling	Hematite	Lean	377,000	40%
	Magnetite	Lean	456,400	35%
Penhsihu	Magnetite	Rich	3,000	60-68%
		Lean	227,000	33%
Waitoushan	Magnetite		150,000	above 30%

Table 8. CHEMICAL ANALYSIS OF MANCHURIAN IRON ORE

Mine	Iron	Alu- mina	Lime	Magne- site	Manga- nese	Sul- phur	Phos- phorite	Silicie acid
Miaoerhkou of Rich	64.01	1.28	0.45	0.027	0.37	0.116	0.017	6.17
Penhsihu Lean	33.63	0.37	0.38	0.08	—	0.030	0.059	50.93
Talitzukou Lean	33.08	—	1.12	—	5.40	0.244	—	13.72
Yingta'oyuan Rich	54.40	0.32	0.63	0.65	0.86	0.31	0.04	19.74

Table 9. IRON ORE PRODUCTION IN MANCHOUKUO

(In Metric Tons)							
	Lean Ore	Rich Ore	Total		Lean Ore	Rich Ore	Total
1917 ..	3,585	99,561	103,146	1932 ..	742,810	237,068	979,878
1922 ..	600	139,528	140,128	1933 ..	770,381	328,032	1,098,413
1927 ..	457,300	173,304	630,604	1934 ..	739,623	393,748	1,133,371
1928 ..	488,000	185,624	673,624	1935 ..	985,480	492,460	1,477,940
1929 ..	529,490	251,768	781,258	1936 ..	1,325,219	579,374	1,904,593
1930 ..	523,894	359,603	883,497	1937			
1931 ..	673,380	250,879	924,259	(1st half)	—	—	1,029,065

Table 10. PRODUCTION OF STEEL MATERIALS BY KINDS

(In Metric Tons)					
	1935	1936		1935	1936
Steel Rods	12,346	67,287	Thick Steel Plates	—	498
Rails	8,397	38,228	Cast Steel	—	152
Thin Steel Plates	4,704	29,141	Total	25,447	135,306

Table 11. PIG IRON PRODUCTION

(In Metric Tons)							
	Pig iron	Steel	Steel materials		Pig iron	Steel	Steel materials
1933 ...	433,523	—	—	May ..	60,987	30,880	26,323
1934 ...	475,826	—	—	June ..	64,915	30,756	25,577
1935 ...	607,948	136,817	25,447	July ..	65,273	35,642	26,390
1936 ...	633,393	344,424	135,306	Aug. ..	69,089	36,886	27,065
1937:				Sept. ..	67,107	39,984	26,866
Jan. ..	55,863	33,970	36,409	Oct. ..	74,374	49,684	35,516
Feb. ..	49,635	27,432	36,449	Nov. ..	75,234	52,359	44,038
Mar. ..	52,383	33,610	41,479	Dec. ..	75,730	25,490	15,439
Apr. ..	51,548	29,851	28,115	Total	762,138	426,544	369,666

Note: * Represents production by Showa Steel Works and Penhsihu Iron & Colliery Co.

Table 12. PIG IRON PRODUCTION CLASSIFIED BY COMPANIES

(In Metric Tons)

	Showa Steel Works (Former Anshan Iron Works)		Penhsihu Iron & Colliery Company	Total		Showa Steel Works (Former Anshan Iron Works)		Penhsihu Iron & Colliery Company	Total
	Works	Penhsihu				Works	Penhsihu		
1925	85,886	50,799		136,685	1932	287,124	81,057		368,181
1926	146,327	51,810		198,143	1933	317,573	115,950		433,523
1927	192,895	51,308		244,203	1934	322,376	153,450		475,826
1928	220,637	64,038		284,675	1935	456,848	151,100		607,948
1929	217,859	77,521		295,380	1936	472,993	160,400		633,393
1930	262,994	86,241		349,235	1937	762,138			762,138
1931	276,650	65,620		342,270					

Table 13. PIG IRON PRODUCTION CAPACITY

(In Metric Tons)

	Production Capacity in 1937	Expansion of Capacity	Estimated Capacity in 1941
Showa Steel Works	700,000	2,300,000	2,800,000
Penhsihu Iron and Colliery Co.	150,000	1,850,000	2,000,000
Total	850,000	4,150,000	4,800,000

Table 14. PRINCIPAL BY-PRODUCTS IN PIG IRON MANUFACTURING

(Metric Tons)

	Coke	Coke Sulphate of		Tar	Benzol	Naphtha-		Ore Dregs	
		Powder	Ammonia			line	Creosote	Pitch	Brick
1927	310,290	18,595	4,406	11,457	1,681	148	2,063	5,847	6,466
1932	408,057	48,682	6,724	18,050	2,962	642	2,792	7,869	5,942
1933	458,664	54,588	6,362	22,346	2,831	557	3,000	8,377	24,747
1934	577,979	43,331	7,525	22,826	4,879	686	3,526	9,156	39,650
1935	654,038	78,433	9,791	30,039	4,405	835	6,667	15,238	47,571
1936	735,787	117,447	11,779	39,919	6,550	1,420	7,827	18,119	50,433

Anshan Iron Mine

The Anshan iron mine was rediscovered in August, 1909, by Japanese geological surveyors who had obtained a hint from the name of a small hill called Tiehshihshan, or Iron Mountain, which stands to the west of Tangkangtzu station on the South Manchuria Railway. The iron mines in this district were probably operated

by the aborigines centuries ago. The primitive iron-work made by natives is from time to time still found in the neighbourhood.

In accordance with the provisions appended to the Sino-Japanese Treaty of 1915, the Japanese obtained the mining rights of Anshan in December, 1916, by establishing the Anshan Iron Mining Corporation under the joint investment of Japan and China. In April, 1916, the South Manchuria Railway Company obtained the permission of the Chinese Government to carry on the iron manufacturing industry in Manchuria, and the construction of the Anshan iron foundry was commenced in March, 1917. The work was completed in May of the following year, operations beginning in 1919, with the firing of the first smelting furnace on April 29th. In view of the poor quality of the ore produced in the mine, the South Manchuria Railway Company conducted a thorough research into the process of concentration, commencing in January, 1920, and by June, 1922, their efforts proved successful with the invention and patenting of the Anshan type lean-ore-disposition method, employing the reduction-roasting furnace. The construction of a concentration factory with the Anshan type reduction-roasting furnaces installed was begun in October, 1923, and completed in July, 1926, the work of concentrating the lean ore being immediately commenced.

To solve the long pending problem of manufacturing steel in Manchoukuo, it was finally decided to commence the industry at Anshan in April, 1933, and all the rights in the Anshan Iron Foundry were assigned by the South Manchuria Railway Company to the Showa Steel Works, which is to carry on mining and the manufacture of pig-iron and steel. The Anshan iron mine lies within a semi-circle with a radius of 16 kilometres around the iron foundry of the Showa Steel Works, divided into the following 11 mine-lots: East Anshan, West Anshan, Takushan, Yingtaoyuan, Wangkiaputzu, Paikiaputzu, Kuanmenshan, Hsinkuanmenshan, Itanshan, Tiehshihshan and Hsiaolingtzu. The product of these mines is mostly lean ore, but it is their characteristic that their iron deposits are very rich.

At a point 48 kilometres to the south-east of Liaoyang and 56 kilometres from Anshan, there is the Kungchangling iron mine, which has the three lots of Huangnankung, Shihling and Sukiaputzu, extending to the north-west from the eastern part of Huang-

ninankung. Investigations are yet unfinished, but, in addition to a rich iron ore, there are abundant deposits of lean ore, containing from 30 to 40 per cent of iron.

This iron mine was first discovered in 1915 by the geological surveyors of the South Manchuria Railway Company, but it was not operated for many years on account of disputes and obstacles concerning the mining rights, which were finally obtained by the Kungehangling Iron Mining Corporation established by joint Japanese and Chinese investment. But actual operations were still unrealized until 1931, when it was put under the management of the Showa Steel Works.

As explained above, the bulk of iron ores operated by the Showa Steel Works are dependent upon lean ores, but their deposits are so enormous that they are estimated at about 2,000 million tons.

Showa Steel Works

The Showa Steel Works was made a juridical body under the law of Manchoukuo instead of Japan, when, in December, 1937, the latter country formally relinquished her extraterritorial rights in Manchoukuo and transferred her administrative rights over the South Manchuria Railway Zone to Manchoukuo. In March, 1938, it then became a subsidiary company of the Manchuria Industrial Development Corporation, and was finally made a special semi-governmental juridical body by the enactment of Imperial Ordinance No. 121, the Showa Steel Works Administration Act, on May 27, 1939, when special privileges for the expansion of business were conferred upon it.

With the two great iron mines at Anshan and Kungehangling as its main property, the Showa Steel Works has many other mines of minerals indispensable for the manufacture of iron and steel. For instance, limestone is obtained at the mines of Kan-chingtzu and Huolienchai, fire-proof materials such as magnesite and dolomite are obtained from the mine of Nihsinshan, but fire-proof clay has to be purchased from Yentai and other mines. Fuel coals are obtained from the Fushun, Penhsihu and Yentai mines, with Peipiao as a further source of supply to meet the demand of the ever expanding iron and steel manufacturing work.

Favoured by such abundant supply of materials either from

its own or other mines in the country, the Showa Steel Works is doing its utmost towards the realization of the expansion plan in order to stabilize the fundamental industries necessary for the progress of Manchoukuo and also to supply iron and steel to Japan.

In conformity with the Five-Year Industrial Plan of Manchoukuo, and according to the third and fourth periods of the expansion programme for the increase of pig-iron production, the fifth furnace was installed on September 18, 1938, the sixth furnace on December 31, 1938, the eighth on February 14, 1939, and the seventh and last on March 7, 1939, all of which are now fired. The work of construction and installation of the furnaces for manufacturing coke, the factories for by-products and a power plant, is well under way, while schemes for the fifth and sixth periods of the expansion programme are already being contemplated.

Having a history of 20 years beginning with 1918, the year of the establishment of the Anshan iron foundry, the mining industry of the Showa Steel Works now stands on a firm basis, and the day when the company may claim to be one of the most powerful iron and steel makers in East Asia is fast approaching. Its rich resources both in materials and man power and its most favoured geographical position justify this expectation. When the present productive capacity is trebled, on the completion of the projected expansion programme, in the near future, the Works will play an important role in the iron and steel industry of Manchoukuo and Japan.

Other Iron Mines

One of the three great iron mines in Manchoukuo is located a little to the north-east of Nanfen station on the Antung-Mukden railway line. It is known as the Miaoerhkou iron mine, and covers an area of 1,500 acres. Most of the iron ore deposited here is of poor quality, containing only some 40 per cent. of iron, but the amount of deposits is estimated at more than 400 million metric tons. There are also found scattered veins of haematite, containing from 60 to 65 per cent of iron, the deposits of which are fairly great.

The Waitoushan iron mine located to the north-west of Miaoerhkou has rich deposits though of lean ore.

The Penhsihu Colliery & Iron Works is relying on mate-

rials from the iron mines of Miaoerhkou, Waitoushan and Tahoyen, the aggregate deposits of which are estimated to be about 500 million tons.

The iron mine district of Penhsihu occupies the most convenient position for the gathering of materials for the manufacture of iron, with these mines and others of semi-anthracite, limestone and fire-proof minerals in the neighbourhood, and with a good supply of water from nearby streams.

The Penhsihu Colliery and Iron Works

It was in January, 1905, that the Okura Kumi Company first opened up the Penhsihu coal mine. In May, 1910, the Penhsihu Coal Mining Corporation was organized with the joint capital of Japanese and Chinese businessmen. In October of the following year it developed into the Penhsihu Colliery and Iron Works, capitalized at four million Chinese silver yuan, enlarging its business to include iron manufacturing. The capital was increased to seven million yuan in 1914. In September, 1935, the Works made another advance with its reorganization into a semi-governmental company with an increase of capital to 10 million yen borne jointly by the Manchoukuo Government and the Okura Kumi. Finally in May, 1939, it made a new start as the Penhsihu Colliery and Iron Works, one of the subsidiary companies of the Manchuria Industrial Development Corporation, increasing its capital to 100 million yen, 20 millions of which were invested by the Manchoukuo Government, 40 millions by the Okura Kumi and the remaining 40 millions by the Manchuria Industrial Development Corporation.

Situated at Penhsihu, most suited to the operation of the heavy industry, with mines of coal, iron ore, limestone, silica and manganic ore at hand, the Penhsihu Colliery and Iron Works is striving to attain its object of manufacturing pig-iron and steel, by increasing the output of coals and pig-iron, and by the establishment of a large plant for the manufacture of steel from pig-iron of its own manufacture. Construction of the steel manufacturing plant is being hurried on at Miyano-hara, near the site of the existing mills.

For the production of caking coals fit for making coke the Penhsihu coal-field is one of the best in the Orient, and in a part of the seams coals containing a small amount of phosphor are

found. The iron ore mined at Penhsihu is also low-phosphorous. The low-phosphorous pig-iron produced here from these materials is an indispensable material for the manufacture of munitions, which previously, together with high quality steel, Japan used to manufacture from supplies of pig-iron obtained from such far away countries as Sweden and England. But as a result of intensive research and study of advanced methods of production, the Penhsihu Colliery and Iron Works has at last succeeded in producing a low-phosphorous pig-iron better than the foreign, and is supplying large quantities to Japan to take the place of the previous imports from Europe.

Iron Mines in the Tungpientao Region

It is a little too early to give any conclusive statement concerning the rich iron deposits in the Tungpientao region, because the survey is not yet completed. But the existence of a vast iron zone, which extends over 50 kilometres from west to east and 15 kilometres from north to south in the district to the east of Chitao-kou and Santaokou and to the west of Talitzukou in Tunghua Province, has already been ascertained, while the existence of iron deposits in the north-eastern section of Tungpientao is suspected, in view of the geological formation of the area.

The Talitzukou iron mine is said to have the deposits of 78 million metric tons of rich quality haematite, containing 63 per cent of iron on the average.

The ore obtained at Chitao-kou contains 52 per cent of iron, which also is above the quality of ores produced elsewhere. It also contains about five per cent of manganese and is an important material supplementary to manganese ore, the deposits of which are scarce in Manchoukuo. The amount of iron ore deposits here is estimated at 10 million metric tons, a figure which it is presumed will increase with the advance of boring and pitting.

The iron mines operated by the Tungpientao Development Company up to the present are restricted to the two mines of Talitzukou and Chitao-kou, but a geological survey is now being carried on at Laoling where a large amount of rich iron ore containing more than 50 per cent of iron seems to exist. Iron veins make their appearance at several spots near Antzuho in Huinan-hsien, and their quality is generally good, though the amount of

deposits is still unascertained. The surveyors at present presume that there is rich iron ore deposited in the Tungpientao region to the amount of more than 100 million metric tons, and lean iron ore of several hundred million metric tons.

The Tungpientao Development Company

The Tungpientao region as the site of rich mineral resources is next to none in Manchoukuo, having wealthy deposits of iron ore at Talitzukou, Chitaokou and elsewhere, large fields of caking coals for the iron manufacturing industry, a limestone pit at Talitzukou and a fire-proof clay field at Tiehchangtzu, the supply of which materials is indispensable for the manufacture of iron.

Established at a site which is ideal as a base for the iron manufacturing industry and favoured with all desirable conditions, the Tungpientao Development Company is busily making preparations for the mining and selling of iron ores and coals in Tunghua Province, and for the manufacture and sale of iron in the first period of its programme. It also intends to establish an iron foundry with a productive power of half a million metric tons per annum in the second period.

The immense mineral resources of the Tungpientao region are going to be exploited on a large scale and utilized "en masse" for the production of iron. But as any separate and discordant management introduced by over-eager profit-seekers would rapidly exhaust the valuable resources, however great in quantity, and result in the waste of much money and human energy, the Tungpientao Development Company has developed its own special system of management, different from the former methods followed by the Manchoukuo Government, in the establishment of a central body for the systematic management of all mineral mines in the Tungpientao region. The future activities of this company in the industrial world of Manchoukuo are awaited with keen interest, but it may be safely predicted that the long forgotten land of Tungpientao may surprise the world in its appearance as a thriving centre of heavy industry.

The Kyowa Iron Mining Company

The iron mines at Kaiyuan, Hsifeng, Hsukiatun, and also those of Chiaotou and Wutaokou, which formerly belonged to the Kangte

Iron Mine, are now under the management of the Kyowa Iron Mining Company.

The company was established on August 2, 1939, with a capital of 10 million yen, two millions of which were invested by the Manchoukuo Government, four millions by Mr. Kamisbima and the remaining four millions by the Manchuria Industrial Development Corporation.

The work of this company is still in its infancy, but the geological surveys recently made indicate that there are extensive iron fields in the districts mentioned above, while the existence of rich deposits at Hsukiatun mine has already been ascertained. The future contribution of this mine towards the completion of the iron policy of Manchoukuo is eagerly awaited, as its immense volume of rich iron deposits, located at a point most conveniently situated for transportation, places it in a very favourable position.

The iron ore from the Kaiyuan mine is of fairly good quality, containing nearly 60 per cent of iron, and that from the Hsifeng mine is of not less excellent quality than the above, for it contains generally 50 to 65 per cent of iron. These mines are expected therefore to produce more and more with the progress of survey and research.

MINING OF NON-FERROUS METALS

Gold Mining

Manchuria was early known throughout the world as a placer gold producing country, the districts being spread over a wide area along the valleys of the large rivers of North Manchuria. Recently gold mines have been opened up in the mountains, mostly in South Manchuria in the provinces of Jehol, Chientao and Kirin, where deposits of gold ore richer than those of the gold mines in Chosen are found. In the period when Manchuria was under the old régimes of China, placer gold mining flourished in Kirin and Heilungkiang provinces, which came to the new State of Manchoukuo as an important legacy.

Table 15. GOLD OUTPUT

	Production (in Gram)	Value (¥)		Production (in Gram)	Value (¥)
1931	111,493	312,180	of which: (value)		
1932	240,017	672,047	Heiho districts	—	6,646,000
1933	66,437	186,014	Chiamussu dis- trict	—	6,841,000
1934	463,639	1,308,189	Hunchun district	—	1,500,000
1935	1,886,895	5,283,306	Chientao Prov.	—	—
1936	3,570,884	10,024,136	Total	—	14,805,000
1937	—	14,805,000			

It is difficult to ascertain the total amount of gold deposits in the country, but according to the reports of the South Manchuria Railway Company and other data, the most promising parts of the country are the placer gold districts of Heilunkiang and the middle and upper streams of the Sungari River, and the placer gold district and gold mine district in Chientao Province on the border between Manchoukuo and Chosen. In 1929 Dr. Edward von Ahnert, well known as a geologist and Manchurian explorer, calculated the total amount of placer gold deposits in Manchuria to be 3,525 metric tons, distributed in 650 places in Heilungkiang Province and North Kirin Province.

Immediately after the foundation of the new State, the Manchoukuo Government made haste to put national economy and finance on a sound basis by effecting a radical reformation in the currency system, which had been rendered utterly chaotic under the former rule of local warlords. And in view of the acute necessity of holding sufficient gold reserves in accordance with the general trend of international political economy, and for the stabilization of national economic life, the Manchoukuo Government entrusted the Kwantung Army with the formation of a gold mining policy, a new sectional office being opened with the injunction to carry out a thorough investigation of the gold mining industry throughout Manchoukuo. Spot surveys were commenced in January, 1933, by six survey corps despatched to the old Heilungkiang and Kirin provinces and the most promising reports were handed in, in October of the same year. Encouraged by these reports, the Manchoukuo Government established the semi-governmental Manchuria Gold Mining Company on May 16, 1934, for the purpose of carrying on the gold-mining industry under State control.

The Manchuria Gold Mining Company

As many as 99 administrative districts, including 88 hsien and 11 chi, in the nine provinces comprising almost the entire area of North Manchuria, are designated as the area for operations of the Manchuria Gold Mining Company, and the company not only has the rights of mining and refining placer gold and gold ore deposited in the streams and mountains in these districts, but also finances other private gold miners in the area, as either consigner or consignee of gold, as a trader in gold ore, placer gold or refined gold, and in leasing gold mining districts to those who wish to take part in the important task of getting the desired output of gold as speedily as possible.

At present, the mining plants of the company are established at Talahan, Hsinglung and Sanfenchu in Heiho Province, Kuantu, Wutungho and Taoling in Sankiang Province and Matita in Chientao Province, while an experimental mining plant has been established at Shihtsutzu in Kirin Province. Placer gold is mostly gathered by placer boats, but in some districts coolies are employed to collect it by hand. With regard to gold ore deposited in the mountains pits are being dug at Mutankiang and various places in Chientao and Kirin provinces. They will be ready for mining, and refining gold in the near future.

The Manchuria Mining Company

While the Manchuria Gold Mining Company is pushing the gold mining industry in North Manchuria, another mining company has made its appearance for the exploitation of other metals such as silver, copper, lead, zinc, antimony, etc., which are found in various parts of Manchoukuo. The Manchuria Mining Company, capitalized at 50 million yen, was established in February, 1938, as a subsidiary of the Manchuria Industrial Development Corporation to exploit the aforementioned metallic resources. The company is conducting an extensive survey in the provinces and is enlarging its sphere of activities in the country by obtaining licences for operating newly discovered profitable mines, purchasing or leasing the better old mines or entering into a joint management of them. The company also has a placer plant at Hsiaoshihtou in Sankiang Province for collecting gold dust, another one at Tumen-

tzu and further experimental ones at Chuangho and Muleng.

The placer gold district which covers a wide area near Hsiao-shihtou in Sankiang Province contains rich gold dust, the place having been famed since olden times. In April, 1938, the Manchuria Gold Mining Company transferred to the Manchuria Mining Company the rights of mining gold in the above-mentioned district as well as at Tumentzu and Kaishantun placer districts, and the latter began its work in conformity with the gold policy of Manchoukuo by making improvements in the methods of gathering gold dust by hand in open fields or mining in pits, and by constructing four new placer boats to be added to the existing ones.

The Tumentzu mining plant is located at Tumentzu of Hunchun-hsien in Chientao Province, and is managing the business in the placer district, conducting surveys and experiments in the wide region adjacent to the present district and planning for the building of two placer mining boats and the installation of special hydraulic pressure apparatus.

The refining facilities in the Kaishantun mining plant at Kaishantun of Holung-hsien in Chientao Province were completed in 1938 and are sufficient for the present. The management is pushing the mining of gold, surveying and experimental mining.

Another famous old gold mine lies at Chiapikou of Huatien-hsien in Kirin Province. The Chiapikou mining plant has given orders for machines to be installed in the newly projected smelting mill for the machine selection and cyaniding of gold ore, with a monthly capacity of 3,000 metric tons, while the construction of the building itself is speedily going on, and is to be completed by the end of 1939. Upon the completion of the mill, its expansion is contemplated in order to attain its final object of disposing of 10,000 metric tons of gold ore per month.

In addition to the gold mines mentioned above, the company is actively engaged in trial diggings on the prospected mine-lots at Taheishan and Tapingkou in Chinchou Province, Tushan, Chinchangkouliang and Chengpei in Jehol Province, Chuangho in Antung Province, Manpao in Chientao Province, Paomachuan and Huinan in Tunghua Province, and Muleng in Mutankiang Province. Success on these prospected mine-lots would open up a great future for the activities of the company.

The Jehol Mining Company, a subsidiary of the Manchuria

Mining Company, has a gold mine-lot at Taoliushui in the fifth section of Hsinglung-hsien in Jehol Province near the Great Wall. The Taoliushui mine is the greatest gold ore mine in Manchoukuo and has large deposits of fine gold ore. The construction of the refinery, with a capacity of disposing of 3,000 metric tons of gold ore per month, will be completed by the end of 1939, when the output of gold in the mine will be still further augmented.

A speedy completion of the construction of all the necessary facilities on the afore-mentioned gold mine-lots, for prospecting and actual mining and refining of the gold ore, is urgently required for the furtherance of the national gold policy of Manchoukuo. With the installation and working of modern mining machinery and apparatus in these plants an epoch will have been created in the history of gold mining in the country, where peace and order are new completely restored and railways and modern roads are under construction, even in the remotest corners of the land.

Silver, Copper, Lead and Zinc

Lead, zinc, silver and copper ores are conjointly deposited in the same mines in Manchoukuo in most cases, and are found mostly in South Manchuria. The mining and smelting of these ores were long carried on by primitive native methods, but such methods have now been superseded by the modern mining methods introduced by the Japanese in recent years. With the restoration of peace and order, geological surveys covering larger and larger areas were carried out, and as a result, metalliferous mines have been opened at Chingchengtzu, Yangchiachangtzu, Tienpaoshan, Kuangtungkou, and at many other places. In spite of the development of coal and iron mining in Manchoukuo on an international scale, the underground wealth of other minerals has been left almost untouched except for a few casual extractions here and there. As was mentioned in an earlier paragraph of this chapter, the Manchuria Mining Company was established by the Manchuria Industrial Development Corporation for the express purpose of excavating minerals other than coal, iron and gold. Since its establishment, the company has surveyed many districts and has begun actual operations in some of the newly discovered mines.

Table 16. LEAD, ZINC AND COPPER RESERVES

Region	Reserves (1,000 metric tons)		
Chingchengtzu	300	Rich ore	70%
		Medium ore	50%
		Lean ore	20%
Yangchiachangtzu ..	100	Gold	0.1-1.21/100,000
		Silver	0.74%-2.0%
		Lead	21.8%-55.9%
		Zinc	12.0%-45.0%
Tienpaoshan	500	Silver	450 grams per ton
		Lead	5.5%
		Zinc	6.0%
		Copper	1.7%
Kuangtungkou	800-900	Lead	4-8%
		Zinc	37-50%
		Silver	0.1%
Total	1,700		

The mineral mines under the direct control of the Manchuria Mining Company are the prospected mine-lots of Manpao, Kuangtungkou, Fuyung, Huinan and Kuantien, while one other is indirectly controlled by the company, the operated mine-lot at Chingchengtzu, which is managed by its subsidiary the Anfeng Mining Company. Another mine at Yangchiachangtzu is operated by the Manchuria Lead Company.

The Manpao mine located at Tatientzu of Antu-hsien in Chientao Province, is much valued as a source of antimony, a valuable mineral greatly in demand in the Japanese market. Prospecting is now going on.

The Kuangtungkou mine lies at Jente village in the third section of Chuangho-hsien in Antung Province. In ancient times the region belonged to Korea, under the name of Kaoli, and the relics found show that lead was once mined here by the natives. The lead mine district extends over a wide area and at present deep boring is being tried.

The Fuyung copper mine lies at Fenhuashan village in the fourth section of Chuangho-hsien in Antung Province and is one of the few precious copper mines in a country favoured with but meagre deposits of this mineral. The rights of this copper mine were assigned to the Manchuria Mining Company in July, 1938, and in the course of vigorous prospecting mining a vast field of

copper deposits was discovered, so that quantitative production of copper is now anticipated.

The Huinan mine is located at Sungshu village of Huinan-hsien in Tunghua Province and produces gold, silver and copper ores. Work in the mine began in March, 1938, under the management of the Manchuria Mining Company, and the actual exploitation commenced in 1939, with the installation of rockdrills.

The Kuantien mine at Shuangshantzu village in the second section of Kuantien-hsien in Antung Province is widely known as an important lead mine, and an extensive trial digging is being carried on in the district.

The Chingchengtzu mine of the Anfeng Mining Company is located at Fengcheng-hsien in Antung Province, and has combined silver and lead ores deposits in the wide area of the hsien, of which lead ores are estimated at more than two million metric tons. As the first plan, a machine selection plant, with a monthly disposition capacity of 3,000 metric tons of ore, has been built and another one with a similar capacity will be constructed by the end of 1940.

The Yangchiachangtzu mine, which belongs to the Manchuria Lead Company, lies at Chihhsi-hsien in Chinchou Province and produces good ores of lead, zinc, iron sulphide and molybdenum. The aggregate amount of deposits is estimated at 10 million metric tons, and may be safely said to be one of the most important districts of the kind in the world. The results of experimental mining for the past six years are excellent, giving confidence in the possibility of large outputs. To increase the production of these minerals, a concentrating plant with capacity of disposing of 500 metric tons of ores per diem has been built as the initial work of the company, while a second plan is now being formulated. The zinc ore separated through concentration is to be sent to Hulutao, where a refinery is under construction.

There is one more metalliferous mine, equally important, at a point 14 kilometres north-west of Laotokou station on the Hsinking-Tumen railway line in Chientao Province. It is called the Tienpaoshan mine and has an estimated amount of lead, zinc, copper and silver ores deposits of three million metric tons. It is operated by the Tienpaoshan Mining Company. A plant with a capacity of separating 300 metric tons per diem and other facilities for mining are under construction and are expected to be com-

pleted shortly.

Limestone. Large deposits of limestone are found in Manchuria. In 1935 production amounted to almost 850,000 tons.

Table 17. LIMESTONE PRODUCTION
(Metric Tons)

	Chushuitzu	Huailienchai	Penhsihu	Total incl. others
1930	292,068	338,293	58,128	668,489
1931	208,040	299,163	34,800	542,003
1932	145,671	165,405	42,000	477,350
1933	113,130	91,931	58,171	601,040
1934	—	—	—	635,760
1935	—	—	—	846,943

Soapstone. The output of soapstone has been steadily rising, amounting to roughly 80,000 tons in 1936.

Table 18. SOAPSTONE PRODUCTION

	Production (Metric tons)	Shipment to Japan Proper	
		From Yingkow	From Dairen
1930	25,726	29,036	7,513
1931	42,890	33,654	7,638
1932	44,316	27,669	6,132
1933	62,430	35,241	12,330
1934	75,410	54,463	
1935	70,572	64,288	
1936	79,250	83,092	
1937	—	111,104	

LIGHT METAL INDUSTRY

The demand for aluminium is rapidly increasing as its use is daily being extended from the manufacture of daily wares and implements to that of one of the chief constituents of such modern machines as aircraft, automobiles, vessels and warships, munitions and innumerable other things, and for the construction of various kinds of buildings. The acquisition of this metal in sufficient quantities, therefore, has now become indispensable for the progress of any industrial country in times of either peace or war.

Aluminium

The aluminium manufacturing industry in Manchoukuo is full of hope, for the country has immense deposits of aluminium shale available in many provinces, Fengtien, Chinchou, and Jehol in South Manchuria and Lungkiang in North Manchuria, and new shale districts are being successively discovered in these provinces. The cost of mining aluminium shale is very low because of the lightness of the work. The material can, therefore, be supplied at low prices to the factories, which are also favoured with an abundant supply of electric power at a comparatively low price. Conditions are extremely favourable for the firm establishment of the industry as the chief supplier of aluminium to the modern machine-manufacturing factories in Manchoukuo and Japan.

The principal aluminium shale districts in Manchoukuo ascertained as rich mines up to date are as follows: Fuchou and Takuei-chiatun in Kwantung Province, Hsiaoshih, Tienshihfu, Niuhsintai, Penhsihu, Yentai and Hanpoling in Fengtien Province, Sungshutai and Wutaoling in Jehol Province, Hungloyen, Tayaokou, Weitzukou and Hsia-Heiyukou in Chinchou Province, and Shuangshantzu in Antung Province. Of the above named mines, Hsiaoshih, Tienshihfu and Niuhsintai are the best known as having rich deposits. The total amount of aluminium shale deposited in Manchoukuo is estimated at some 25 million metric tons.

Table 19. ALUMINA SHALE RESERVES

	Quantity		Quantity	
	(M. tons)	Grade (%)	(M. tons)	Grade (%)
Yentai	1,034,000	45-41.3	Shaoshin ...	5,930,000 45.3-55
Penhsihu ...	3,202,000	40-47.3	Others	5,770,900 37.2-55
Niuhsintai ..	9,382,000	46.4-52.5	Total	25,318,900

The Manchuria Light Metals Company

On account of the lack of proper facilities for their exploitation, these rich mines of aluminium shale had been practically left untouched until recently. But the ever increasing demand for aluminium by the factories producing munitions, both in Manchoukuo and Japan, induced the South Manchuria Railway Company, in 1932, to industrialize the resources, whereupon a laboratory for the manufacture of aluminium from shale was established at Fu-

shun. In the following year research was also commenced at the Central Laboratory of the company, and for several years the two laboratories continued intensive researches on alumina and the manufacture of aluminium, until finally they succeeded in finding an excellent process for concentrating the shale into aluminium. As a result, the Manchuria Light Metals Company was incorporated on November 2, 1936, as a semi-governmental juridical body of Manchoukuo. Then, in March, 1938, the company was put under the control of the Manchuria Industrial Development Corporation for the completion of its equipment for the execution of a bigger production programme.

For the manufacture of aluminium, the Manchuria Light Metals Company obtains a sufficient supply of aluminium shale from the mines of Hsiaoshih, Tienshihfu, Niuhsintai, Yentai and Hungloyen, a abundant supply of electric power from the Fushun Colliery Power Plant and that of pure shale coke from the Fushun Oil Plant. It uses electrodes of its own manufacture from the tar supplied by the Penhsihu Coal and Iron Company, and also cryolite obtained from fluorspar produced in the country. The main products of the company are aluminium, bleaching powder, hydrochloric acid and silicic iron.

Aluminium is utilized as a light alloy for the manufacture of automobiles, aircraft and other high speed machines, kitchen utensils, as an oxidising agent for the manufacture of steel, as paint applied on building materials, and in many other ways. Bleaching powder is used as an industrial chemical for the fibre industries as well as a disinfectant, while hydrochloric acid is used in the chemical industry, and silicic iron, an oxidising agent, is supplied to the casting industry.

To meet the ever increasing demand for these products, the company began construction of a smelting plant on June 9, 1937, and completed it, with all the necessary equipment installed for the manufacture of aluminium, in June of the following year. The goal set for an increased production for the first period of the expansion programme was reached at the end of 1938, the second period for a further increase of output was commenced in April, 1939, and, at the same time, preparations were begun for the construction of the Antung factory for the third phase of the expansion programme. Favoured by the best local conditions for

industry activities, and a well-developed transportation and traffic system in the district, the aluminium manufacturing industry of the company is expected to become still more prosperous when its expansion programme is completed.

Magnesium

In a belt of land with a surface area of approximately 60 square kilometres between a line drawn north-east from Tashihechiao station on the trunk line of the South Manchuria Railway and another drawn north-east from Niuhsinshan, four kilometres south of Tashihechiao, there lies a vast district of magnesite with estimated deposits of 13,600 million metric tons, perhaps without parallel in the world both in quantity and quality. The history of its discovery goes in this way. In 1913, a Manchurian native handed a piece of rock supposed to be limestone to a Japanese, who had it assayed, as a result of which it was revealed that the rock was magnesite. An extensive survey was accordingly conducted by Japanese geologists, and it became clear that the principal magnesite seams were in this district, which extends, with a width of from two to six kilometres from north to south, from Tashihechiao to the neighbourhood of Lienshankuan station on the Antung-Mukden railway line, a distance of about 100 kilometres, with occasional breaks. The district is composed of a chain of small hills 500 metres or so in height, among which the mineral is deposited in immense quantities, mostly in seams with a thickness of from several to several hundred metres; for instance, the seam at Kuanmashan is over 700 metres thick. The nature of the magnesite found here is excellent, being a pure carbonate magnesite containing but little iron, alumina and lime, and is probably the first in the world in purity.

Table 20. STATISTICS OF PRINCIPAL MAGNESITE REGIONS
Analysis (%)

Region	Deposit (1,000 m. tons)	Analysis (%)					
		Magnesite	Silicic acid	Oxidized iron	Alumina	Lime	Heat loss
Chingshanpei	40,000	46.78	0.67	1.01	0.11	0.12	51.39
Hsiao Shengshuissu	200,000	46.31	0.83	0.76	0.15	0.25	51.20
Kuanmashan	93,200	46.36	1.23	0.46	0.41	0.42	50.74
Paihushan	24,652	45.64	1.99	1.44	0.60	0.25	50.02
Niusintai	1,590	45.72	1.04	1.34	0.63	0.67	51.20
Shengshuissu	70,000	45.06	2.23	0.78	0.78	0.66	50.71
Pingerhfang	150,000	48.03	3.63	0.60	0.36	0.87	49.20

Table 21. CHEMICAL ANALYSIS OF MANCHURIAN DOLOMITE
(%)

Region	Silicic acid	Oxidized iron	Alumina	Lime	Magnesite	Heat loss
Dairen	1.35	0.49	—	31.01	20.33	46.55
Yingchengtzu . .	1.15	0.58	0.94	31.70	17.05	—
Haimaotao . . .	0.40	0.48	0.36	30.24	21.23	47.00
Kuanmashan . .	0.27	0.65	0.02	30.23	21.26	47.57
Niusintai	0.56	0.72	0.20	30.12	21.85	46.55
Taling	0.88	1.06	0.04	18.20	30.63	49.14

The Manchuria Magnesium Company

In order to exploit the magnesite and to manufacture magnesium therefrom, the Manchuria Magnesium Company was established on July 4, 1938, under the auspices of the Manchuria Light Metals Company and immediately commenced operations by exploiting the magnesite in the neighbourhood of Tashichiao and by inventing a process for manufacturing magnesium by the combination of its own produced materials of magnesite, chlorine and potassium, the latter being by-products of the salt manufacturing industry in Manchoukuo. Thus, the magnesium manufacturing industry in Manchoukuo has made a good start under most favourable conditions.

The company produces metallic magnesium as its main line, and refined salt, bromine, potassium bromide, Glauber's salt and gypsum as side lines. Metallic magnesium is the lightest of all the so-called light metals, its alloy having a specific gravity of only 1.74. In spite of this, it has an endurable toughness. The sphere of its use is widening as a material for the manufacture of machines and tools, especially aircraft, automobiles and spinning looms.

The construction programme of the Manchuria Magnesium Company aims at an annual production of 3,000 metric tons of magnesium, starting with a small plant capable of producing 30 metric tons per annum built in June, 1939, to be followed by the construction of a larger plant with a 1,000 ton capacity by the end of June, 1940, and of the largest one with a 2,000 ton capacity by the end of 1941.

In view of the extensive utilization of this light metal in the manufacture of aircraft, automobiles and accessories thereof in recent years, the acquisition of magnesium in large quantities has

become indispensable for the existence of any Power, and the position of the company in the industrial world of Manchoukuo will be paramount when these proposed plants are completed and producing, as they are expected to do, over 3,000 metric tons of magnesium per annum.

MINERAL OIL

Fuhsin Oil Field

An announcement was made on May 16, 1940 by the Manchoukuo Government substantiating the discovery of oil at Fuhsin, in Chinchow Province. According to the announcement the oil field stretches 100 kilometers from east to west with Fuhsin as the center. An appropriation of 5,000,000 yuan has been allotted for the development of this oil field in 1940.

Signs of oil at Fuhsin were first noted by the Manchuria Colliery Company in May, 1936, while drilling for coal in the vicinity of the Fuhsin Hsien Government Office. By the end of the following month the Company succeeded in obtaining crude oil, scanty as it was, and on July 3 a report was made to the Government on the discovery of oil deposits at all of the Company's mine-lots in the Fuhsin district.

Shale Oil Industry

Utilization of the oil shale seam which forms the upper part of the coal veins in the Fushun colliery has attracted the attention of the S.M.R. central laboratory since its very establishment. The first report of the Central Laboratory, made public in 1910, outlined part of the research work conducted on the problem. Research work on the oil shale has been kept up and in 1921 its chemical composition was made clear by boring into the various parts of the oil shale seam. Research and laboratory work on the dry distillation of oil shale and the by-products from dry distillation have been completed so successfully that the shale oil industry has been placed on a commercial basis.

Invention of an internal combustion apparatus for dry distillation at the Fushun colliery made it possible to industrialise the manufacture of shale oil in 1928. The success of this new branch

of industry may be gauged from the fact that the amount of shale oil now produced is almost equal to the amount of natural petroleum produced in Japan. A plan for the expansion of the shale oil industry on a large scale has already been worked out and is now being executed, thus making a substantial contribution to the successful execution of the Government's fuel policy.

Table 22. OIL SHALE RESERVES

	Quantity (M. tons)	Grade (%)		Quantity (M. tons)	Grade (%)
Funshun	5,400,000,000	5.5	Lotzekow	200,000,000	4 - 6
Fengning	16,000,000	4 - 7	Ilan	2,000,000	4 - 7
Kingfotang ..	12,000,000	3 - 7	Total	7,628,000,000	

Coal Liquefaction Industry

The S.M.R. Central Laboratory has been conducting basic research on the direct liquefaction of coal for more than ten years, paying particular attention to its industrialization. Meanwhile, the S.M.R. plant at Fushun for the liquefaction of coal on the basis of a process evolved by the Japanese Navy Fuel Depot, carried out a great revision in its plans and requested the Central Laboratory to participate in the management of the plant. Consequently, the Laboratory decided to cooperate with the plant in perfecting the process of coal liquefaction on the strength of its many years research experience in the field.

In accordance with the revised plan, work on the construction of the plant at Fushun has been expedited since 1937 and a trial operation of part of the technical equipment in the plant was successfully carried out in February, 1939. Trial operation of the machinery, kept up since, proved a success; hence on July 22, 1939, the President of the South Manchuria Railway Company and the Director of the Publicity Bureau of the Navy Office simultaneously announced the success attained by the Fushun plant in liquefying coal.

The coal liquefaction plant at Fushun is still an experimental one so far as size is concerned, but in producing oil of high octane content, the plant has succeeded in establishing the foundation for regular industrialization of this industry.

CHAPTER XX MANUFACTURING INDUSTRY

The manufacturing industry, in the modern sense of the term, saw its inception in Manchuria in the closing decades of the nineteenth century. The enterprises first to be established consisted of the manufacture of consumption goods, such as paper, matches, tobacco etc., and in the processing of agricultural products indigenous to the country, such as soya beans and wheat. The production of capital goods witnessed its advent after the Russo-Japanese war when the South Manchuria Railway Company erected plants for the manufacture of rolling stock and other railway equipment. But it is only after the foundation of Manchoukuo in 1932 that the manufacturing industries have shown substantial activity and expansion. This is due mostly to the large-scale industrial production programme that was launched to make the country self-sufficient in many of the commodities in which Manchoukuo had been dependent upon foreign countries.

Plans on foot are of a far-reaching nature. They include the establishment of such advanced industries as the production of automobiles and aeroplanes. The realization of these industries is still in the offing, however, due to unsettled world conditions which are impeding the importation of the necessary equipment for the building of these enterprises.

As for the light industries the basic requisites for accelerating such enterprises are rapidly taking shape with the expansion in the generation of electric power and increases in coal and iron production.

Industrial Center

The artery of the manufacturing industries of Manchoukuo is concentrated largely in Mukden. This city is situated in the plains of Central Manchuria and is the junction of two of the most vital railways in the country, one leading to Dairen and the other to Chosen. Since the foundation of Manchoukuo, Mukden has become important increasingly as an industrial center with

the establishment of the Tetsunishi district in the southern part of Mukden. At the end of June, 1939 there were ninety-nine factories and plants in this district and thirty-five more were to commence operation in the near future. Plans have been made for the construction of an additional number of fifty-two factories. The number of plants capitalized at over 1,000,000 yuan which were to be completed by the end of 1939 in the Tetsunishi district are the following:

	Capitalization (yuan)
Spinning Mills	
Man-Nichi Flax Spinning Co.	15,000,000
Kyotai Hosiery Co.	5,000,000
Metal Manufacturing	
Manshu Shinwa Factory	1,000,000
Dairen Machinery Co. (Mukden factory)	10,000,000
Machinery Manufacturing	
Manshu Tokyo Electric Co.	10,000,000
Hoten Seisakusho	2,000,000
Manshu Hidate Co.	5,000,000
Chemical Industry	
Kokka Rubber Co.	1,000,000
Oriental Tire Co.	10,000,000
Hoten Yushi	2,000,000
Manshu Kansai Paint Co.	1,000,000
Manshu Shuto Paint Co.	1,000,000
Manshu Paint Co.	1,500,000
Manshu Shoko Glass Co.	3,000,000

Transference of Japanese Factories to Manchoukuo. For some time the authorities concerned have studied the feasibility of transferring from Japan to Manchoukuo some of the idle factory equipment obtaining in the former country. This project is gradually being materialized. In 1940 a total of forty factories were expected to be transferred to Manchoukuo.

Industrial Production

Statistics of production in the manufacturing industries show that in 1936 the value of output amounted to roughly 806 million yuan, of which Manchoukuo accounted for 335 million yuan and Kwantung Province for 470 million yuan. Figures for later years are not available but indications point to a considerable increase in production since 1936 in both the light and heavy industries due to marked expansions in capital investments. Statistics of

production, number of factories and workers and the situation in capital investments are given in the following tables.

Table 1. STATISTICS OF MANUFACTURING INDUSTRIES IN MANCHURIA

(Production in MY1,000)

Industries:	Manchoukuo			Kwantung & S.M.R. Zone			Total		
	No. of factories	Actual		No. of factories	Aggregate		No. of factories	Total	
		No. of workers	Pro- duction		No. of workers (1,000)	Pro- duction		No. of workers	Pro- duction
Textile:									
1934 ...	1,139	33,389	39,232	128	10,750†	23,312	1,267	44,149	62,544
1935 ...	—	—	—	98	4,090	31,867	—	—	—
1936 ...	1,066	—	70,234	99	4,611	40,768	2,065	—	111,002
1937 ...	—	—	—	58	2,144	—	—	—	—
1938 ...	—	—	—	54	—	—	—	—	—
Metallic:									
1934 ...	740	7,635	15,260	116	2,667†	4,261	856	10,302	19,521
1935 ...	—	—	—	154	9,049	43,667	—	—	—
1936 ...	812	—	23,311	174	6,790	128,629	986	—	151,940
1937 ...	—	—	—	120	1,226	—	—	—	—
1938 ...	—	—	—	143	—	—	—	—	—
Machine & Tool:									
1934 ...	328	4,617	6,727	181	12,425†	22,550	509	17,042	19,550
1935 ...	—	—	—	142	6,340	34,416	—	—	—
1936 ...	421	—	10,177	207	5,357	40,245	628	—	50,422
1937 ...	—	—	—	181	3,841	—	—	—	—
1938 ...	—	—	—	161	—	—	—	—	—
Ceramic:									
1934 ...	405	15,522	5,560	184	9,733†	10,569	589	26,163	16,127
1935 ...	—	—	—	132	2,412	14,765	—	—	—
1936 ...	427	—	11,384	156	4,856	17,037	583	—	28,420
1937 ...	—	—	—	132	1,623	—	—	—	—
1938 ...	—	—	—	—	—	—	—	—	—
Chemical:									
1934 ...	601	8,339	29,836	280	9,267†	74,005	881	17,606	103,841
1935 ...	—	—	—	177	2,829	116,738	—	—	—
1936 ...	742	—	44,483	190	3,146	122,755	932	—	167,238
1937 ...	—	—	—	103	2,076	—	—	—	—
1938 ...	—	—	—	—	—	—	—	—	—
Provision:									
1934 ...	711	6,708	38,136	413	7,453†	28,862	1,124	14,161	69,215
1935 ...	—	—	—	353	1,625	37,070	—	—	—
1936 ...	815	—	110,892	393	2,695	54,819	1,208	—	165,711
1937 ...	—	—	—	163	750	—	—	—	—
1938 ...	—	—	—	161	—	—	—	—	—

Industries:	Manchoukuo			Kwantung & S.M.R. Zone			Total		
	Actual		Pro-duction	Aggregate		Pro-duction	Total		Pro-duction
	No. of factories	No. of workers		No. of factories (1,000)	No. of workers (1,000)		No. of factories	No. of workers	
Textile:									
Lumbering & Woodworking:									
1934 ...	526	6,387	5,862	121	2,884†	10,947	647	9,171	16,809
1935 ...	—	—	—	89	795	10,668	—	—	—
1936 ...	578	—	14,635	81	901	10,267	654	—	24,902
1937 ...	—	—	—	65	333	—	—	—	—
Printing & Bookbinding:									
1934 ...	275	4,859	4,798	117	2,392†	4,126	392	7,251	8,924
1935 ...	—	—	—	101	1,168	6,246	—	—	—
1936 ...	302	—	7,414	134	1,464	7,602	434	—	15,016
1937 ...	—	—	—	91	674	—	—	—	—
Miscellaneous:									
1934 ...	1,773	20,541	14,781	237	4,792†	11,613	2,010	25,683	28,274
1935 ...	—	—	—	141	3,671	23,510	—	—	—
1936 ...	1,407	—	42,878	133	2,060	29,440	1,540	—	72,318
1937 ...	—	—	—	103	1,119	—	—	—	—
1938 ...	—	—	—	400	—	—	—	—	—
Total:									
1934 ...	6,469	107,997	164,287	1,790	63,524†	196,362	8,286	172,979	360,649
1935 ...	—	—	—	1,398	32,273	334,956	—	—	—
1936 ...	6,570	—	335,408	1,576	32,332	470,547	8,146	—	805,955
1937 ...	—	—	—	1,021	13,786	—	—	—	—
1938 ...	—	—	—	1,032	17,398	—	—	—	—

Note: Statistics for 1937 with regard to Kwantung are exclusive of the S.M.R. zone, jurisdiction over which was transferred to Manchoukuo as a result of the abolition of extra-territoriality.

† Indicates actual number of operatives.

Factories operating less than five workers are excluded in the statistics for Kwantung.

Table 2. CAPITAL INVESTMENT OUTSTANDING OF JOINT STOCK COS. IN MANUFACTURING INDUSTRIES IN MANCHURIA

(Amount in MY1,000)

	Textile				Metallic				Machinery			
	Authorized		Paid-up		Authorized		Paid-up		Authorized		Paid-up	
	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%
1934	22,050	5.3	13,096	4.4	121,350	29.0	79,697	26.7	16,850	4.0	9,775	3.2
1935	27,100	5.5	16,371	4.7	139,350	28.5	105,647	30.2	19,900	4.1	10,537	3.0
1936	35,650	5.1	24,137	5.1	171,150	24.9	115,947	24.7	24,270	3.5	15,022	3.2
1937	55,850	5.8	36,242	5.7	192,550	19.9	147,447	27.7	44,100	4.5	25,940	4.1
1938	87,330	7.6	49,882	6.5	233,450	20.4	191,302	25.0	98,270	8.6	59,397	7.7

(Continued)	Ceramic				Chemical				Food			
	Authorized		Paid-up		Authorized		Paid-up		Authorized		Paid-up	
	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%
1934 ..	16,250	3.9	12,102	4.0	62,975	15.0	43,850	14.7	39,605	9.5	22,249	7.5
1935 ..	26,950	5.5	17,932	5.1	64,750	13.2	46,840	13.4	62,540	13.8	31,712	9.1
1936 ..	29,336	4.2	21,190	4.5	114,960	16.7	71,685	15.2	76,940	11.2	42,572	9.1
1937 ..	30,986	3.3	22,230	3.5	199,810	20.6	106,255	16.8	82,842	8.6	50,324	8.0
1938 ..	37,161	3.2	27,263	2.7	245,800	21.5	124,855	16.4	79,065	7.0	51,205	6.7
	Electric				Gas				Lumbering & Woodworking			
	Authorized		Paid-up		Authorized		Paid-up		Authorized		Paid-up	
	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%
1934	93,580	22.5	92,287	31.0	10,000	2.4	10,000	3.4	11,755	2.8	4,930	1.7
1935	94,320	19.4	92,977	26.6	10,000	2.0	10,000	2.9	13,255	2.7	6,050	1.7
1936	94,460	14.3	93,345	14.8	10,000	1.5	10,000	1.6	13,855	2.4	8,190	1.3
1937	214,069	22.2	123,298	19.5	20,000	2.7	18,000	1.8	14,565	1.5	7,960	1.3
1938	213,629	18.8	135,717	17.6	20,000	1.7	18,000	2.3	17,450	1.5	9,430	1.2
	Printing & Bookbinding				Other Industries				Grand Total			
	Authorized		Paid-up		Authorized		Paid-up		Authorized		Paid-up	
	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%	Cap.	%
1934 ..	2,775	0.65	913	0.31	20,900	5.0	6,762	2.3	418,090	100	295,663	100
1935 ..	3,250	0.67	1,200	0.34	27,020	5.5	9,882	2.8	488,435	100	349,156	100
1936 ..	3,600	0.52	1,450	0.31	81,685	11.8	66,195	14.1	657,906	100	469,735	100
1937 ..	5,690	0.59	2,485	0.39	103,251	10.7	90,311	14.4	963,723	100	630,495	100
1938 ..	5,100	0.44	3,975	0.52	107,201	9.4	94,584	12.4	1,145,457	100	766,112	100

TEXTILE INDUSTRY

Cotton Spinning

Approximately 90 per cent of the clothing in Manchuria is made from cotton. This large demand should have been a stimulus to the development of the cotton growing industry on a large scale in this country. The actual state of affairs points to the contrary, however, almost the entire demand being supplied through Japan and from China.

It was only in 1921 that the cotton spinning industry came to assume an aspect of importance with the establishment of a spinning plant in Mukden. As a result of the increase in population, the subsequent demand for cotton yarn and cotton cloths expanded and in 1937 the total volume of cotton cloths used throughout the length and breadth of Manchoukuo amounted to

650,000,000 square yards, of which only 220,000,000 yards or one-third of the total requirements were supplied in the country and the rest imported from Japan.

In order to improve this situation, the Manchoukuo Government set up a plan for self-sufficiency in the supply of low graded cotton. As a consequence the total volume of production of cotton cloths for 1939 was planned to attain approximately 380 million square yards, or some 60 per cent of the total demand. The areas being devoted for the cultivation of raw cotton both in Manchoukuo and Kwantung Province for the past few years have been growing quite markedly.

A statistical outline of the spinning situation is given below:

Table 3. DETAILS OF SPINNING INDUSTRY
(1935)

	Number of Factories	Production % (M¥1,000)	Amount of Investment % (M¥1,000)	Number of Workers %	%			
Wild Silk Reeling	70	6.1	2,859	7.3	604	3.5	10,398	31.1
Cotton Yarn	2	0.2	6,538	16.7	6,172	35.5	2,339	7.0
Cotton Tissue	405	35.6	15,099	38.5	1,886	10.8	9,444	28.2
Woollen Textile	10	0.9	2,663	6.8	5,655	32.5	1,381	4.4
Silk Fabric	7	0.6	236	0.6	82	0.5	398	1.2
Knitted Goods	375	32.9	5,196	13.2	1,602	6.1	6,345	19.0
Dyeing & Weaving	242	21.3	5,634	14.3	784	4.5	2,612	7.8
Cotton Mfg.	11	1.0	705	1.8	46	0.3	265	0.8
Others	17	1.4	302	0.8	1,096	6.3	207	0.5
Total	1,139	100.0	39,233	100.0	17,387	100.0	33,389	100.0

Table 4. SPINNING COS. IN MANCHURIA
(June, 1939)

Cos.	Factories	Spindles	No. of	
			Twisting Spindles	Looms
Naigai Cotton Spin. ..	Chinchow, (Kwantung)	107,552	—	2,272
Manshu Fukubo	Kwantung	49,520	960	—
Manshu Spinning	Liaoyuang	78,700	2,808	1,045
Yingkow Spinning	Yingkow	55,728	—	1,730
Azuma Spin. & Weav.	Chinchow	52,400	—	740
Manshu Cotton Yarn ..	Wafangtien	30,920	18,752	—
Mukden Spin. & Weav.	Mukden	50,816	10,888	2,000
Kungtai Hosiery	Mukden	50,400	—	—
Toyo Tyre Ind.	Mukden	5,000	—	—
Kunghuo Spin. & Weav.	Mukden	—	—	276
Fukuju Weaving	Chinchow	—	—	1,600
Total	11 cos.	481,036	33,408	9,663

Incidental to the development of the China Affair, it has become difficult to realize the projected output of cotton due to the exchange control for the import of raw cotton, curtailment in the production of raw cotton in North China, etc. The aim of the five year plan projected by the Manchoukuo Government in 1937 for the production of raw cotton was to realize the expansion of the total area to 183,000 acres and yielding 100,000,000 lbs. of raw cotton to be carded, or an actual cotton output of 304,000,000 lbs. The plan was later subjected to revision. The time has since been shortened to four years and the volume of production increased to 200,000,000 lbs. of raw cotton at the end of the four-year period.

Manchoukuo, as a cotton growing area, lies the farthest north in latitude of all the other cotton producing countries. Consequently, her cotton yields have seen the ups and downs within a large margin and the destiny of the industry in the future depends greatly upon the extent of the success in the preventing of nature's frivolity by dint of human power.

Manchoukuo obtains the larger portions of her raw cotton from North China, India and the United States.

Table 5. RAW COTTON IMPORT

(Unit: in metric tons)

	Japan	Chosen	China	Brit. India	U.S.A.	Total incl. Others	
						(M¥1,000)	
1934	633	27	774	14,400	1,140	17,000	12,284
1935	0	89	1,300	10,700	220	12,300	9,407
1936	—	34	5,000	16,800	790	23,200	18,601
1937	—	45	5,000	26,300	4,100	37,200	32,202
1938	554	116	1,667	—	—	2,337	2,357
1939	572	213	536	—	—	1,321	1,713

Table 6. COTTON YARN IMPORT

(Unit: in metric tons)

	Japan	Chosen	China	Total incl. Others	
				(M¥1,000)	
1934	3,441	275	6,110	10,016	12,533
1935	3,660	35	1,980	5,690	7,938
1936	4,760	33	596	5,380	7,699
1937	5,550	570	344	6,500	10,740
1938	2,889	290	78	3,280	5,478
1939	1,922	—	69	1,991	4,384

Tussuh Silk Industry

While other lines of the textile industries are more or less bound by control measures and their development bridled in one way or another in Manchoukuo, there is one line which is advancing at big strides free from any yoke whatsoever. This is the tussuh enterprise. Formerly tussuh, which is a kind of silk, was used exclusively for the production of pongee. Of late, however, in view of the necessity for the production of some substitutes for wool, it was discovered that tussuh fiber is highly efficient in this connection, and a phenomenal advance in this industry is being witnessed. Antung, a city on the Yalu river bordering Chosen, is the center of the industry. Its annual output in recent years is said to amount to 5,000-8,000 million cocoons.

Exports of wild cocoon products such as silk pongee, waste silk amounted to MY14,997,000 in 1939.

Table 12. EXPORT (INCLUSIVE OF SHIPMENT TO JAPAN)
OF WILD SILK COCOONS AND OTHERS

(Volume in m. tons; Value in MY1,000)

	Cocoons, refuse and wild		Raw silk yarn wild		Waste silk		Silk pongees		Total Value
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	
1934	1,395	230	1,480	7,409	1,635	796	17	178	8,613
1935	790	137	1,360	7,279	1,493	1,106	35	325	8,846
1936	1,430	317	990	6,118	990	1,155	35	329	7,919
1937	880	177	1,485	8,386	1,585	2,623	34	298	11,484
1938	258	164	1,199	6,257	1,804	4,698	45	513	11,632
1939	161	70	769	5,877	1,816	7,996	55	1,054	14,997

Rayon. A significant development in the manufacture of rayon has been witnessed in Dairen and Ryojun. From a total of 2,790 yards produced in 1932, the output was up to 237,180 yards in 1935, valued at ¥79,270.

Promotion of the Staple Fibre Industry. Perceiving an urgent necessity of promoting the staple fibre industry, the Manchoukuo Government laid down a concrete policy therefor towards the end of June, 1937. The details of the policy are as follows:

- (1) To institute a state laboratory in regard to staple fibre to pursue the study of spinning, weaving, colouring and finishing.

- (2) To exempt staple fibre tissues from the consumption tax, reduce the railway freights thereon and encourage the consumer in the use of articles made wholly or partly of staple fibre.
- (3) To lay down a state policy of pulp for Japan, Korea and Manchoukuo by taking adequate measures for afforestation and the import of materials for pulp, while ensuring and investigating the resources of materials, taking into consideration the close relations between pulp for the manufacture of rayon and that for paper.

Hemp-Dressing Industry

Manchoukuo is noted as a foremost producer of agricultural products, marketed to all the principal countries of the world. Sacks made of dressed-hemp, therefore, are needed in large numbers for this huge export. The total requirements of sacks in recent years ranged from 35,000,000 to 40,000,000 in addition to some 30,000,000 second-hand sacks. The quantity required, however, is naturally dependent upon the yield of the agricultural products. Since the Government is now planning to increase the output of agricultural products, the requirement for sacks is expected to mount to as much as 80 or 90 million sacks in the not distant future. The total quantity of hemp sacks produced at two of the largest plants in Manchoukuo, namely, the Manchou Seima aggregated 11,300,000 in 1938.

Besides the foregoing plants, the Liaoyang Boma Kaisha, Mannichi Ama Boshoku Kaisha and the Nichiman Boshoku Kaisha are also in this trade. With the products of these latter concerns combined it is expected that self-sufficiency in the supply of hemp sacks will be attained in the near future.

In this connection it is necessary to mention a new specie of hemp now under cultivation called "kenafe", which grows luxuriantly in the regions around the Caspian Sea. This specie was transplanted here a few years ago and in 1939 there was a crop yield of some 5,000 metric tons, from which some 5,000,000 sacks can be produced. It is believed, therefore, that when this industry is developed, it will no doubt prove to be of great help towards the alleviation of the shortage in the supply of hemp sacks.

Table 9. MANUFACTURES OF MANCHURIA HEMP-DRESSING CO.

	Gunny bags (Pieces)	Hemp Cloth (yards)	Hemp yarn
1930 ..	3,028,000	442,000	1,560,000
1931 ..	3,765,500	331,000	1,630,000
1932 ..	4,773,000	182,000	1,261,000
1933 ..	4,649,000	175,000	1,166,000
1934 ..	4,629,000	174,000	1,829,000
1937 ..	16,800,000	—	—

Table 10. PLANTATION OF NI-CHI-MAN FLAX SPINNING & WEAVING CO.

	Area under Cultivation (Cho)	Crop of Green flax (Lbs.)
1934	2,000	70,000,000
1935	6,000	150,000,000
1936	10,000	300,000,000
1937	15,000	450,000,000
1938 (Estimate)	28,000	700,000,000

Table 11. IMPORT OF FLAX, RAMIE, HEMP AND MANUFACTURES THEREOF

	Jute, Flax, Ramie, etc.		Yarn, thread, cordage twine and rope		Gunny bags, new		Gunny bags, old		Total value (M¥1,000)
	(m. tons)	(M¥1,000)	(m. tons)	(M¥1,000)	Piculs (1,000)	(M¥1,000)	Piculs (1,000)	(M¥1,000)	
1933 ..	7,806	1,394	—	—	467	11,925	353	5,067	20,377
1934 ..	18,367	2,666	1,900	912	427	10,390	506	5,744	20,463
1935 ..	17,362	2,205	2,520	3,326	556	10,599	345	4,041	18,913
1936 ..	21,684	3,049	2,840	1,652	446	9,468	368	4,557	19,516
1937 ..	26,041	3,942	4,180	2,343	737	15,347	301	3,926	27,590
1938 ..	14,057	4,929	2,191	1,447	52,993*	18,196	9,204*	2,714	27,286
1939 ..	12,420	4,311	1,696	2,262	31,210*	14,521	25,509*	18,792	39,886

Note: * 1,000 Pieces.

Woolen Industry

The woolen industry in Manchoukuo subsists chiefly on the wool obtained from sheep. It is stated that an increase in the number of sheep to 35,000,000 heads within the next 35 years is being planned. The breeds which are being reared at present are the merino, improved, crossbred and the Mongolian, of which there are at present some 9,000, 10,000, 30,000 and 3,500,000 heads, respectively.

The production of woolen textiles is at present dominated almost wholly by the Mukden plant of the Man-Mo Keori Kaisha and the Harbin plant of the Kotoku Keori Kaisha which account for a combined output of ¥10,000,000 annually. Including imports, the total consumption of woolen goods and textiles in Manchoukuo reached approximately ¥40,000,000 annually until the outbreak of the China Incident.

Bean Oil Milling

The soya bean oil milling enterprise enjoys a pre-eminent position among the various industries of Manchuria. This is due in great measure to the fact that Manchuria is one of the largest growers of soya beans and that bean oil and bean cakes form important items in the exports of the country. The value of bean oil output amounted to over thirty-one million yuan in 1936, and production is mainly centered in the cities of Dairen, Yingkow, Antung and Harbin.

Uses of Bean Oil. Soya bean oil was used originally by the Chinese for cooking, lighting, and lubricating purposes and the demand was limited within China. In less than thirty years, however, it began to occupy an important place in the world market. The chief reasons for this rapid recognition are the cheapness of its manufacturing cost as compared with other vegetable oils and the wide range of its utility as substitute in the fields of industry and foodstuffs, such as substitute for linseed oil in the manufacture of paint, for olive oil and cotton-seed oil in the manufacture of foodstuffs, as a material in the making of soap. On the other hand, its chief drawback is the fact that it can not surpass the materials for which it is substituted. For example, linseed oil cannot be used as a foodstuffs but it is the best material in the making of paint and the bean oil is used only in case the supply of linseed oil is small or its cost is high.

The olive oil and cotton-seed oil far surpass the bean oil as foodstuff but they are utterly unfit in the manufacture of paint, while the peanut oil, palm oil, olive oil, copra oil, and cotton-seed oil greatly excel the bean oil in the manufacture of soap. Thus, the fields in which the bean oil can be used are wide. The price of bean oil fluctuates in the world market in accordance with the supply of other oils. However, the bean oil has cultivated its demand in the past by adjusting its price to suit the world market. Because the soya beans used as raw material are inexpensive, the extration of bean oil is both easy and cheap. The crude bean can be preserved easily and for a long time, and the demand for bean cakes, the by-product, is great.

Table 22. OUTPUT OF BEAN OIL AT THE PRINCIPAL CITIES
(Unit: in 1,000 Kin; 1 Kin=0.6 kilogram)

	Dairen	Yingkow	Antung	Harbin	Total	Total incl. Others	
						(MY1,000)	
1932	154,620	26,240	22,930	17,270	221,061	238,720	32,657
1933	98,209	20,540	17,280	16,410	152,520	192,180	26,617
1934	91,023	11,216	17,706	13,896	133,841	214,175	20,216
1935	63,895	12,175	10,572	19,193	105,836	198,165	25,308
1936	57,301	7,676	5,701	15,559	86,237	157,760	31,505
1937	58,632	8,578	5,000	19,756	91,967	—	—
1938	64,478	2,300	6,264	24,212	97,255	—	—
1939	89,022	2,896	6,784	29,148	127,850	—	—

Bean Cake

The residue from the extraction of oil from soya beans is manufactured into bean-cakes, which are highly valued as a fertilizer and as animal feed. Manchurian bean-cakes are exported abroad in large quantities. In 1939 total exports of bean-cakes amounted to 1,220,000 metric tons, value at MY125,253,000. The largest purchaser was Japan which took 807,000 metric tons.

Bean-cakes are used almost wholly as fertilizer in Japan, but in Europe they are principally used as animal feed. With the betterment of the manufacturing methods of bean-cakes it is expected that the uses of this product will gradually widen. Excellent results are being obtained already in various countries in this direction. Especially noteworthy is the recognition of the fact that the protein content of bean cakes is the cheapest obtainable protein today and research works are directed in an added degree toward the utilization and manufacture of various protein products.

The output of bean-cakes, classified by principal cities, and the number of bean-cake mills are subjoined:

Table 23. OUTPUT OF BEAN CAKE AT THE PRINCIPAL CITIES
(Unit: Volume in 1,000 pieces; 1 piece weighs 27.6 kgs.)

	Dairen	Yingkow	Antung	Harbin	Total	Total incl. Others	
						(MY1,000)	
1932	30,812	5,228	4,568	3,441	44,050	47,744	80,687
1933	19,587	4,093	3,444	3,270	30,394	38,436	59,576
1934	20,227	2,772	3,935	2,911	29,845	42,835	50,117
1935	14,198	2,921	2,349	3,870	23,339	39,633	53,901
1936	12,734	1,877	1,267	3,392	19,269	31,552	63,135
1937	13,029	1,973	1,040	3,614	19,656	—	—
1938	14,320	491	1,139	4,626	20,585	—	—
1939	19,528	897	1,172	5,930	27,527	—	—

Table 24. NUMBER OF BEAN-CAKE MILLS AND PRODUCTIVE CAPACITY

	South Manchuria Districts				North Manchuria Districts		Total
	Dairen	An-tung	Ying-kow	Other places	Harbin	Other places	
No. of mills							
1923	87	25	29	416	42	7	606
1929	59	26	22	297	40	28	472
1933	50	23	20	238	43	28	402
1936	45	22	14	289	24	28	422
1937	42	21	20	235	28	20	365
Productive capacity in 1,000 pieces of bean-cake per day							
1923	308	45	42	128	87	5	615
1929	218	54	39	130	83	46	570
1933	149	37	33	88	94	38	439
1936	173	36	29	90	57	38	423
1937	140	31	31	70	60	24	356

Bean Cake as Fertilizer. Among the constituent elements of bean cakes are three fundamental elements of fertilizer, namely, nitrogen, phosphoric acid, and potassium. Especially important is the nitrogenous content of bean cakes which averages about 6.8% in the case of the Round Cake, while its absorbability and fertilizing quality are excellent, making the bean cakes a fine nitrogenous fertilizer. As compared with 6.8% of nitrogen, the average phosphoric content of bean-cakes is 1.2% and the potassic content 1.7%, making the bean cakes usable also as phosphoric or potassic fertilizer.

Bean Cake as Animal Feed. The bean cake as an animal feed, especially in its digestability and the quantity of its protein content, equals the cotton-seed cake and peanut cake and excels other oil cakes. Moreover, it does not give any harmful effect upon domestic animals as in the case of other oil cakes. It has been used, therefore, in Manchuria and China for years as an excellent animal feed. In Europe and America, the soya beans are first of all used for extracting oil and the resultant bean cakes are used almost entirely as animal feed and not as fertilizer as in Japan. Of the Manchurian bean cakes, the Plate Cakes produced by the Nisshin Oil Mills at Dairen and the Anglo-Chinese Eastern Trading Company at Harbin were pulverized and exported to America where they were used as chicken feeds. In recent years the Round Cakes are exported to Europe either in their original form or in the form of dried and pulverized condition.

Table 25. EXPORT OF BEAN OIL AND BEAN-CAKE
BY DESTINATIONS

(a) Bean Oil									
Volume (m. tons):	Japan, Chosen & Taiwan		China	Hong- kong	Ger- many	Great Britain	Nether- lands	U.S.A.	Total incl. Others
	1932	387							
1933	278	47,675	—	24,400	4,910	2,520	1,960	81,120	
1934	1,322	31,800	1,610	43,750	2,520	10,210	426	97,200	
1935	755	9,730	9,180	26,200	15,900	11,410	6,000	89,000	
1936	1,230	9,720	10,900	26,000	11,390	3,840	2,550	66,000	
1937	615	2,306	6,527	19,407	3,443	24,666	5,907	69,654	
1938	298	21,166	180	15,907	225	14,441	712	57,248	
1939	4,989	22,777	5	9,553	283	8,991	5,579	72,508	
Value (MY1,000):									
1932	79	17,932	—	3,768	777	1,086	198	24,512	
1933	63	10,519	—	5,497	1,127	570	449	18,473	
1934	302	4,792	316	7,703	454	1,754	82	16,262	
1935	178	2,208	2,052	5,935	3,584	2,580	1,370	20,132	
1936	429	3,111	3,291	8,183	3,551	1,236	860	21,383	
1937	219	847	2,411	6,731	1,303	9,253	2,197	25,343	
1938	93	5,317	46	3,804	51	3,625	157	14,099	
1939	1,774	7,289	3	2,728	76	3,059	1,783	23,051	
(b) Bean-cake									
Volume (1,000 m. tons):	Japan, Chosen & Taiwan		China	Ger- many	Nether- lands	U.S.A.	Great Britain	Total incl. Others	
	1932	719							479
1933	765	234	8.4	5.2	25.4	1.6	1,040		
1934	972	182	9.3	4.5	30.5	1.0	1,205		
1935	765	192	6.3	0.6	39.2	1.9	980		
1936	701	110	4.5	0.2	4.1	0	849		
1937	646	99	4.2	0.8	37.5	—	802		
1938	807	40	0.3	3.1	8.4	—	869		
1939	1,077	124	0.5	2.3	5.9	—	1,220		
Value (MY1,000):									
1932	34,437	24,700	1,781	424	543	166	66,301		
1933	40,948	12,976	471	257	1,265	81	57,614		
1934	41,376	7,475	386	184	1,256	39	51,509		
1935	38,076	9,946	333	30	1,945	98	51,370		
1936	43,220	7,341	320	13	1,610	5	53,127		
1937	50,292	7,713	301	59	2,896	—	62,336		
1938	65,365	3,134	30	284	774	—	70,575		
1939	110,923	12,378	52	241	626	—	125,253		

Flour Milling

There has always been considerable room for the development of the flour industry in Manchuria. According to the foreign trade returns for 1939, Manchoukuo imported 298,942 metric tons of wheat flour in that year, while the domestic needs amounted to 880,000 metric tons. The consumption of flour in Manchoukuo is only one bag per capita per annum, in striking contrast to 8 bags, which is the per capita amount in North China.

The output of wheat in Manchoukuo is still far from the level of two million tons of the domestic requirements. During 1939, the shortage of wheat due to an unsatisfactory crop necessitated restriction on the production of flour, compelling the milling industry to mark time, while causing a keen competition for the product.

Table 34. STATISTICS OF FLOUR MILLS

Year Ending Feb.	No.	Flour mill Production capacity per day (bags)	Demand and supply (in bag of 22 kg.)		
			Production	Import	Consumption
1933	—	—	8,809,652	22,931,124	31,740,776
1934	—	—	7,847,689	23,695,043	31,542,732
1935	70	110,540	11,043,073	21,083,942	32,127,015
1936	—	—	23,720,796	9,536,683	32,257,479
1937	70	119,840	29,432,378	3,553,671	32,980,049
1938	76	—	—	10,900,000	—
1939	93	—	—	13,588,273	—

Flour Milling Industry Control. Under these circumstances, the Government while importing flour from Japan, instituted control over production, distribution, and consumption of flour. As a subsidiary organ of control, the Manchuria Flour Industrialists' Association was organized, with the following objects:

- (1) To maintain the price of domestic wheat at a high level (this to stimulate wheat cultivation);
- (2) To keep the price of flour as low as possible;
- (3) To secure smooth distribution of wheat and flour;
- (4) To restrain the consumption of flour;
- (5) To restrict foreign flour as much as possible.

Manchuria Flour Control Company. The Government took steps to revise the organic structure of the Manchuria Flour Con-

trol Company. Under the revised system, the Company will regulate not only the price and distribution of flour but also the production of wheat flour and substitute flour. Further, to assist the farmers in times of bad crops, a certain percentage of the purchasing price of wheat is set apart to build up a relief fund.

Nichiman Flour-Milling Company. The Company was first organized as a Japanese corporation, with a capitalization of ¥2,000,000. Starting its business with two factories in Harbin and one factory each in Suihua and Hailar, the Company, in October and November, 1936, purchased six factories in Harbin and transferred them to suitable localities. In Hailing, a seventh factory was acquired, also by purchase, in January, 1938. These factories have all been modernized and the capacity of production trebled. To carry out the expansion above mentioned, the Company increased its capital to 10,000,000 yuan in December, 1936.

The Company decided to engage also in the flour substitute industry, and also in rice polishing. The factories for these purposes were completed in Harbin, Tsitsihar, Chinchow, Anta, and Hailing in March, 1940. The Company has a subsidiary in the Nikko Provisions Company, capitalized at ¥2,000,000. To contribute to the Northern Frontier Development Scheme, the firm is undertaking the cultivation of a large tract of land in North Hsingan Province.

Spirit

Formerly, the distilling industry in North Manchuria was carried on by small distilleries. On the establishment of a big distillery under Japan-Manchoukuo joint management in November, 1933, some of those distilleries were closed down.

The company referred to above is styled the Tatung Alcohol Distilling Company, which was brought into being by purchasing plants owned and managed by Mr. Su Peng-chi. It is capitalized at ¥1,670,000 which is paid up. It has three plants with a total annual capacity of 40,000 koku. The Company is also planning the manufacture of an alcoholic fuel to replace gasoline for the use of motor-cars.

Table 28. ALCOHOL FACTORIES IN MANCHOUKUO

(End of Mar., 1936)

Name of companies	Locality	24-hour Capacity (Hecto-litres)	Name of companies	Locality	24-hour Capacity (Hecto-litres)
Tatung (1st)	Harbin	16.00	Cheupien	Taheiho	8.61
" (2nd)	"	14.80	Shangkao	Harbin	6.15
" (3rd)	"	3.08			
Szehohsing	Hailar	3.08	North Manchuria		
Tungyung	Tungning	1.23	Sugar Mfg. Co. Ashih-ho		8.61
Chunghua	Harbin	5.54	Manchuria Sugar Mukden,		
Tahsing	"	3.08	Mfg. Co. Hulan		8.61
Tunghsing	"	2.46	Total		81.25

Saké

Many places of Manchoukuo are suited for the brewing of saké by reason of the quality of water. This industry has therefore gradually developed with the increase in the number of Japanese residents. The output of saké for 1938 amounted to 57,000 koku or 103,771 kilolitres.

Saké imports in 1939 amounted to 9,530,000 litres valued at ¥6,970,000. Production of alcoholic liquors in Kwantung is subjoined.

Table 26. PRODUCTION OF ALCOHOLIC LIQUORS IN KWANTUNG

(Volume in koku; Value in yen)

	Production			
	Japanese sake		Chinese liquors	
	Volume	Value	Volume	Value
1933	9,853	553,780	9,928	539,559
1934	16,420	1,010,670	9,792	497,529
1935	14,740	925,333	10,994	493,608
1936	12,254	725,500	12,078	518,607
1937	10,725	663,148	7,694	567,373
1938	—	759,398	—	792,998

Beer

The demand for beer in Manchuria, was 2,800,000 dozens in 1937.

Beer brewing was carried on many years ago in Imienpo and Harbin in North Manchuria and Dairen in South Manchuria. The breweries in Dairen had long been closed down under the pressure of Japanese imports. Two breweries in North Manchuria had been the only breweries in existence in Manchuria until the Manchurian incident of 1931. Since then, the demand for beer has greatly increased due to the growth in the number of Japanese settlers.

Beer imports in 1938 amounted to 1,221,812 dozens of bottles valued at ¥2,986,000.

Table 27. BEER BREWERY COMPANIES IN MANCHOUKUO

(End of May, 1938)

	Locality	Established	Authorized Capital	Annual Capacity (Bottles)
Dai-Manshu Hop Beer Brewery Co. (a)	Harbin	1934	¥2,500,000	5,000,000
Harbin Beer Brewery Co. (b)	"	1936	2,000,000	4,800,000
Tahsing " " (c)	"	—	—	3,500,000
Manchuria " " (d)	Mukden	1934	2,000,000	9,600,000
Asia " " (a)	"	1936	1,000,000	5,760,000
Oriental " " (b)	Harbin	1933	—	400,000
Harbin Beer Factory	"	1933	—	300,000
Total	—	—	—	29,360,000

Ice

Dairen is the biggest ice consuming market in Manchuria. The Dairen Ice Manufacturing Company, which is the sole supplier to the market, has a daily productive capacity of about 200 tons. The combined capacity of ice at the other important cities are 415 tons.

Soy

In sympathy with the rapidly increasing number of Japanese residents since the foundation of the country, the soy industry has made marked developments. The output of soy in Manchoukuo and Kwantung was estimated at 120,000 koku in 1938. Imports of soy were valued at ¥3,819,000 in 1939.

Table 29. PRODUCTION OF SOY AND MISO (BEAN PASTE) IN KWANTUNG

	No. of plants	Production			
		Miso		Soy	
		Volume (Kwan)	Value (Yen)	Volume (Koku)	Value (Yen)
1931	16	646,691	230,725	20,950	520,633
1932	17	837,850	312,540	58,069	553,388
1933	22	953,129	338,751	39,714	923,542
1934	22	1,090,711	453,757	49,259	1,168,904
1935	24	1,357,560	495,464	52,102	1,136,847
1936	31	1,485,739	712,848	116,734	1,373,284
1937	22	982,398	345,658	44,253	961,475
1938	—	—	792,652	—	1,226,872

Note: Factories operating less than 5 workers excluded.

Sugar

The climate of Manchuria is suited for the cultivation of beet-root but not for sugar cane. The cultivation of beet-root was started in 1906 or 1907. The manufacture of sugar from beet-root was initiated in 1909 when a sugar mill was established at Ashiho. Since then no small number of sugar mills have been set up in both North and South Manchuria. Sugar production has shown a significant expansion, rising from 30,246 piculs in the crop year of 1933 to 293,097 piculs in the crop year of 1939.

Sugar imports in 1939 amounted to 183,573 metric tons valued at ¥42,396,000.

Table 30-A. SUGAR PRODUCTION IN MANCHOUKUO

(In piculs)

Crop Year Ending Feb.	Manchuria Sugar Manufacturing Co.			Total	North Manchuria Sugar Mfg. Co., Ashiho		Grand Total
	Mukden (Former South Manchuria Sugar Mfg. Co.)	Hsinking (Former Tieling)	Harbin (Former Hulan Sugar Mfg. Co.)				
1920	23,496	—	—	23,496	21,021	44,517	
1921	58,434	—	—	58,434	15,834	74,268	
1922	60,075	—	—	60,075	9,282	69,357	
1923	73,702	16,382	38,220	90,084	12,831	141,135	
1924	52,156	23,590	40,950	75,746	43,680	160,376	
1925	13,545	24,659	*40,000	38,204	27,437	*105,641	

(Continued)

Crop Year Ending Feb.	Manchuria Sugar Manufacturing Co.			Total	North Manchuria Sugar Mfg. Co., Ashiho	Grand Total
	Mukden (Former South Man- churia Sugar Mfg. Co.)	Hsinking (Former Tiehling)	Harbin (Former Hulan Sugar Mfg. Co.)			
1926	50,191	47,003	—	97,194	*30,681	*127,875
1927	—	—	—	—	*11,712	* 11,712
1928	—	—	—	—	*31,941	* 31,941
1929	—	—	2,379	—	—	2,379
1930	—	—	1,830	—	—	1,830
1931	—	—	—	—	—	—
1932	—	—	—	—	—	—
1933	—	—	—	—	30,246	30,246
1934	—	—	—	—	64,536	64,536
1935	—	—	—	—	52,124	52,124
1936	—	—	—	—	68,715	68,715
1937	49,117	—	—	49,117	55,689	104,806
1938	67,403	—	58,499	125,902	68,520	194,422
1939	84,458	—	102,399	186,857	71,406	258,263
1940	87,486	37,901	100,550	225,938	67,159	293,097

Note: * Estimate. Harvest period in Manchoukuo is chiefly from November to February of the following year.

Table 30-B. AREA, PRODUCTION, EXTRACT, ETC.

	Area (Cho)	Raw material consumed (1,000 kin)	Output (piculs)	Extract (%)	Beet output per cho (kin)	Sugar output per cho (kin)
1933	3,888	21,143	30,246	14.25	10,880	778
1934	3,600	46,371	64,536	13.92	12,820	1,793
1935	3,456	36,349	52,124	14.39	9,480	1,508
1936	3,694	54,413	69,715	12.65	14,730	1,860
1937	5,421	85,956	104,806	12.19	14,800	1,933
1938	11,386	163,802	194,422	11.87	14,380	1,708
1939	16,890	237,613	258,263	10.87	14,060	1,524

Table 31. SUGAR MANUFACTURING COMPANIES IN MANCHURIA

(End of April, 1939)

	Factories	Capacity per 24 hours day (In m. tons)	Paid-up capital (M¥1,000)	Estab- lished	Interests
Manchuria Sugar Manu- facturing Co.	Mukden ...	{ Beet sugar .. 500 Refined Sugar 90	5,000	1935	Japanese & Manchoukuoan
	Hsinking ..	Beet sugar .. 500			
	Harbin ...	Beet sugar .. 500			
	*Suihua	Beet sugar .. 500			
	*Kirin	Beet sugar .. 500			
North Manchuria Sugar Manufacturing Co. ...	*Ashiho	{ Beet sugar .. 400 Refined sugar 40	2,000	1934	Japanese & White Russian
	*Others	Beet sugar .. 500			
Hokuman Sangyo K.K. .	*Mutankiang	Beet sugar .. 500	12,500	1939	Japanese
	*Others	Beet sugar .. 500			

Note: * Under project.

Table 32. DEMAND AND SUPPLY OF SUGAR IN MANCHURIA

(In piculs of 60 kilograms)

	Production	Import	Export	Re-export	Consumption per capita
1928	—	1,218,204	—	—	1,218,204 3.69
1929	—	1,422,923	—	—	1,422,923 4.31
1930	—	1,360,762	—	—	1,360,762 4.04
1931	—	1,108,939	—	—	1,108,939 3.25
*1932	—	1,558,139	828	172,834	1,384,477 4.48
1933	30,246	2,001,214	15	437,106	1,594,369 5.30
1934	64,536	1,548,497	16	313,838	1,299,179 4.24
1935	52,124	1,776,721	—	260,348	1,568,497 4.77
1936	68,715	3,696,968	—	1,907,069	1,858,614 5.18
1937	104,806	2,798,117	—	1,202,050	1,700,873 4.61
1938	194,422	3,938,450	—	2,196,400	1,936,472 5.06
1939	258,263	3,059,566	—	1,262,050	2,055,779 5.34
1940	293,097	—	—	—	—

Note: Exclusive of cube sugar in 1932.

* Re-export include sales principally to China in recent years.

Table 33. SUGAR IMPORTS OF MANCHURIA BY KINDS

(In picul=60 kilograms)

	Under Dutch Plantation		Refined sugar	Rock sugar	Cube & loaf sugar	Total	Molasses
	Standard No. II	white sugar					
1926	164,585	125,016	510,607	50,104	17,115	867,427	—
1927	224,078	431,262	348,514	56,222	29,444	1,089,520	—
1928	188,643	380,461	514,486	42,254	14,320	1,140,164	—
1929	164,321	677,238	400,013	63,403	27,634	1,332,609	—
1930	211,767	346,997	685,323	45,380	19,180	1,308,647	—
1931	112,146	249,710	677,173	37,723	11,859	1,088,611	—
1932	188,951	230,879	1,090,989	47,320	—	1,558,139	44,843
1933	206,661	37,318	1,688,838	68,397	—	2,001,214	65,526
1934	176,295	7,117	1,282,761	60,797	21,527	1,548,497	34,616
1935	142,671	7,047	1,544,225	50,671	32,107	1,776,721	59,505
1936	334,526	197,831	3,070,203	58,957	35,451	3,696,968	182,791
1937	523,974	341,819	1,860,122	34,581	37,621	2,798,117	85,788
1938	1,137,050	848,600	1,752,083	200,267	—	3,938,450	—
1939	618,766	650,100	1,424,733	418,000	—	3,059,567	—

Electro-Chemical Industry

As a first step towards the promotion of the electro-chemical industry, a special corporation named the Manchuria Electro-Chemical Industry Company was established in October 1938 with a capital of 30,000,000 yuan to provide for the development of the chemical industry. Concerning the aforementioned capital, the Government is to provide 20,000,000 yuan and the Manchuria Electric Corporation Ltd. 10,000,000 yuan.

The Manchuria Electro-Chemical Industry Company is set to utilize the surplus hydro-electricity of the Sungari power plant amounting to some 700,000,000 kw. for the annual production of 200,000 metric tons of carbide which will provide the basis for the chemical industry. Furthermore, it is the aim of this Company to establish subsidiary companies to which carbide will be supplied for the manufacture of different products. At the present time the Manchuria Electro-Chemical Industry Company has in contemplation the production of the following articles annually:

	Annual Production (metric tons)
Synthetic Rubber	20,000
Acetone	1,000

(Continued)

Annual Production
(metric tons)

Coal Nitrogen	30,000
Perchloric Acid Ammonia	1,000
Tussuh Silk	1,000

Ammonia Sulphate

The production of ammonia sulphate is making much headway, the output for 1935 by three of the major producers, namely, the Fushun Oil Factory, the Fushun Electric Power Station and the Showa Steel Works, amounting to 39,122 metric tons. Projects had been laid to increase the output of this chemical to 348,000 metric tons by the end of 1939. Of this amount the Manchuria Chemical Industry Company was expected to account for 240,000 metric tons.

As a result of the independence of Manchoukuo from China in 1932, which charged Japan with the mission of chemical exploitation of the resources of the new country, a charter for the Manchuria Chemical Industrial Company was granted by the Tokyo Government in December, 1932 and the Company was formerly organized in May, 1933. A factory was started at Kanchengtzu near Dairen. Of the capitalization of ¥25,000,000, a half was taken up by the South Manchuria Railway Co. In March, 1935 the factory was completed and immediately put in operation with the purpose of turning out sulphate of ammonia to the amount of 180,000 metric tons a year to be increased later. The plant is equipped with 35 coke ovens. There is a coal shed of 2,000 tons capacity for fueling the ovens. The plant uses 30,000 kilowatt of electric power, a daily supply of 8,000 tons of fresh water and 64,000 tons of salt water and consumes 120,000 tons of Fushun coal yearly.

Table 18. PRODUCTION OF SULPHATE OF AMMONIA

(In Metric tons)

	S.M.R. Co.			Showa Steel Works	Penhsih Iron & Colliery Co.
	Manchuria Chemical Ind. Co.	Fushun oil factory	Fushun electric power station		
1933	—	18,376	5,681	4,891	—
1934	—	14,675	5,560	6,958	—

(Continued)

	S.M.R. Co.				
	Manchuria Chemical Ind. Co.	Fushun oil factory	Fushun electric power station	Showa Steel Works	Penhsihu Iron & Colliery Co.
1935	—	24,717	6,175	8,230	—
1936			181,033		
1937	135,408	26,154	6,391	11,480	1,843

Table 19. PRODUCTION CAPACITY OF MANCHURIA
CHEMICAL INDUSTRIAL CO.

(End of Sept. 1937)

	Metric Tons		Metric Tons	
Sulphate of Ammonia ...	240,000	Nitrate of Ammonia	3,000	
Sulphuric Acid (50°) ...	210,000	Tar	1,000	
Sulphuric Acid (60°)	10,000	Creosote	1,000	
Nitric Acid	3,000	Pitch	2,000	
Benzol	1,000	Cokes	100,000	

The ammonia sulphate industry received a further impetus in 1939 by the establishment of the Manchuria Ammonia Sulphate Company, capitalized at ¥50,000,000 invested in equally by the Manchoukuo government and Japanese industrial guilds. The company plans to produce 200,000 metric tons of ammonia sulphate annually commencing 1941, and will establish its plant at Hulutaq.

Export. Exports of sulphate of ammonia were 128,029 metric tons valued at ¥11,777,000 in 1939.

Paint

Despite a growing demand for paint due to building activities and other developments, the country has hitherto been almost entirely dependent upon imports for the supply of this line of goods. Since the Manchuria Incident, however, the paint industry has gradually expanded and improved. In December, 1934 the Manchurian Paint Company amalgamated the Harbin Paint Company in order to meet swiftly increasing demands for paint. At present there are in Manchoukuo only three paint factories, namely, the Dairen and Harbin factories of the Manchurian Paint Company and the Mukden factory of the Nippon Paint Company. These

three factories supply about 70 per cent of the total requirements of paint of Manchoukuo.

The Manchurian Paint Company was established in February, 1919 in Dairen capitalized in 1938 at ¥1,500,000 (625,000 paid-up). Its products consist of common paint, mixed paint, varnish, paint oil, aqueous wall paint, putty, illuminating paint, hydrozincite and other chemicals. Since its establishment, the Company has steadily developed. It has branches in Shanghai, Tientsin and Harbin. Its productive capacity is ¥700,000 to ¥900,000 a year. The manufacturers mentioned above find their markets not only in North and South Manchuria but also in China and the South Seas region. After the Manchurian Incident, there was established at Mukden another paint company styled the Japan-Manchoukuo Paint Company with a capital of ¥1,000,000, of which ¥250,000 was paid up. In September, 1934 the Company was merged in the Nippon Paint Company, which has had steady markets in Manchuria for twenty years past, and has since been known as the Mukden factory of the Nippon Paint Company. Its annual productive capacity is put at ¥1,500,000.

Paint imports in 1939 amounted to ¥1,582,000.

Dyestuff

Formerly, the people of Manchuria made a considerable amount of indigo and other dyestuffs from the bark of pagoda or maple tree. In those days small dyestuffs plants existed in all parts of the country. With the appearance of German dyes in the market the industry began fast to lose strength. Due to the stoppage of the import of German dyes during the World War, Japanese and American dyes found their way to the Manchurian market, while the manufacture of indigo revived.

The Yamato Dyestuff Company is the only company of the kind in Manchoukuo. It was established in Dairen in 1919. It is capitalized at ¥2,000,000, of which ¥800,000 is paid up. Its productive capacity is 2,000,000 kin.

Imports. Imports of coal tar dyes in 1939 were valued at ¥6,796,000. Principal exporters are Germany and Japan.

Paper

About 80 per cent of the demand for paper is supplied from abroad, Japan being the major supplier.

There are two large paper manufacturing companies in Manchoukuo, namely, the Yalu Paper Manufacturing Company and the Matsuura Paper Manufacturing Company. The former is capitalized at ¥5,000,000, representing the Okura and Ohashi interests and has a capacity of 12,000 tons for pulp and 8,500 tons for paper. The latter is capitalized at ¥300,000 and has a capacity of 900 tons. Until the foundation of Manchoukuo there were a number of minor paper mills operating in the country, including the Funing Paper Company, which has since been merged.

Imports. Paper imports in 1939 were valued at ¥49,589,000.

Pulp

The pulp industry of Manchoukuo was initiated in 1919 by the Yalu Paper Manufacturing Company, when it installed equipments for an annual capacity of 12,000 metric tons. Owing, however, to the post-war economic crisis, the Company was forced to suspend operations. As a result of the Manchurian Incident, the Japan-Manchoukuo economic bloc was completed, while the rayon industry began to make phenomenal developments.

Table 17. PULP MANUFACTURING CONCERNS

(End of June, 1938)					
	Established	Authorized Capital	Paid-up Capital	Affiliation	Felling Dist.
Toho Pulp Ind. Co.	May, 1934	¥30,000,000	¥7,500,000	Kanebo	{ Chientao, Antu, Fung, Menkiang
Japan-Manchuria Pulp Co.	Sept., 1936	15,000,000	5,000,000	Oji Interest	{ Mutankiang Valley, Huatien
Manchuria Pulp Industrial Co.	May, 1934	10,000,000	5,000,000	Mitsubishi	{ Huachuang, Poli, Iran, Fangsheng
Toyo Pulp Co. ...	Sept., 1936	10,000,000	5,000,000	Kawanishi	Chientao
Chengteh Reed Pulp Co.	Nov., 1936	5,000,000	2,500,000	Kanebo	Yingkow
Soya Bean Pulp Co.	Aug., 1937	10,000,000	5,000,000	{ Sakai Fibre Ind. Mitsui Bussan Kaiyuan S.M.R.	

Reed Pulp

A process for converting Manchurian reed into pulp which was successfully made by the Kanegafuchi Spinning Company some ten years ago has led to the establishment of a reed pulp industry in the country. Much hope is pinned in the future of this enterprise. The Kanegafuchi Spinning Company produced in 1938 approximately twenty tons of reed pulp daily, and plans are on foot to increase yearly production to 150,000 tons at a total outlay of ¥80,000,000. The Kanegafuchi Spinning Company purchased approximately 10 square miles of reed land along the Liao river at a cost of ¥1,600,000. A similar amount of reed land was purchased by the Oji Paper Company which is also interested in the reed pulp industry. Plans for developing the reed pulp industry in Shingishu, Chosen is also under consideration by the Kanegafuchi Spinning Company.

Cement Industry

Prior to the Manchurian Incident of 1931, there existed no cement factory in Manchuria except the cement plant of the Penhsihu Iron Works which produced blast furnace cement for self-consumption by mixing its slag with imported Portland cement at the ratio of 40 per cent. In the Kwantung Leased Territory, however, the Onoda Cement interests were already operating in the vicinity of Dairen a branch factory, which supplied the bulk of its output to Manchuria.

Since the founding of Manchoukuo, however, the local demand for cement has been increasing rapidly due to the enormous activity of civil engineering works and other industries stimulated by financial support from Japan. As a result, many cement factories have been established, and their aggregate capacity have been expanding to a point of making the new State self-sufficient in cement.

Table 13. DEMAND AND SUPPLY OF CEMENT

(In metric tons)				
	Output	Import	Export	Demand
1924	103,400	28,400	28,600	96,000
1925	—	26,000	48,600	71,300
1926	—	49,600	64,600	97,000

(Continued)	Output	Import	Export	Demand
1927	111,900	69,200	32,900	135,000
1928	151,400	41,900	68,800	129,000
1929	205,700	46,000	80,400	166,000
1930	194,500	46,800	106,100	138,200
1931	162,000	38,900	83,500	109,400
1932	108,800	33,600	35,100	117,900
1933	184,900	155,400	18,400	323,200
1934	232,600	305,400	8,100	527,600
1935	378,000	155,200	11,900	516,500
1936	580,000	167,400	95,100	624,700
1937	800,000	49,598	28,843	820,755
1938	—	176,287	13,399	—
1939	—	452,904	439	—

Table 14. CEMENT MANUFACTURING COS. IN MANCHURIA.

	Capital (M¥1,000)		Annual Capacity (M. tons)	Affiliation of:
	Authorized	Paid-up		
Dairen factory	500	500	250,000	Onoda
Anshan factory	250	250	200,000	"
Manchuria Cement Co.:				
Liaoyang factory	2,500	2,500	240,000	Chengteh Assn.
Wenchun factory	—	—	150,000	"
Fushun Cement Co.:				
Fushun factory	2,500	2,500	300,000	S.M.R. Co.
Tatung Cement Co.:				
Kirin factory	3,000	3,000	280,000	Asano
Chinsi factory	—	—	120,000	"
Penhsihu Cement Co.:				
Penhsihu factory	3,000	3,000	350,000	Okura
Onoda Cement Co. of Manchou:				
Chuantou factory	5,000	2,500	160,000	Onoda
Harbin Cement Co.:				
Harbin factory	1,000	1,000	73,000	Mitsui
Mutankiang factory	—	—	150,000	"
Total	17,750	15,250	2,123,000	

By the end of 1941, according to plans decided upon in 1940, the cement output in Manchoukuo is expected to be doubled. Among the projects for increasing production capacity for 1940 includes the enlargement of the Fushun cement works and another at Penhsihu. Besides, the Antung cement factory is expected to complete its first stage expansion program by December,

1940, with the re-installation of cement-making machines removed from Gifu, Japan. By April, 1941, the Tatung Cement Company, located at West Mukden, and the Antung factory will complete their second stage expansion programs. By August 1941, the Miyanojima plant of the Penhsihu Cement Co., the Onoda Cement Co. plant at Hsiao-tuntzu (Kwantung Territory), and the Mutankiang plant of the Harbin Cement Co. are expected to be completed.

In the meantime, the cement-making machinery of the Asahi Cement Co. at Amakusa (Kumamoto prefecture, Japan) will be installed at Miaoling, Chientao Province by the East Manchuria Cement Co. and will be powered with the 60 kilowatt generator recently purchased from the Kyoto Electric Company, the installation of which was expected to be completed by December, 1940.

Manchuria Federated Cement Co. Formerly, the cement market in Manchuria was regulated by a self-control agreement among the members of the Manchuria Cement Manufacturers' Association, but in consequence of the changes that occurred in the market situation following the launching of the five-year industrial development plan, coupled with strained international conditions, an exercise of State control over the cement market came to be desired. Accordingly, in September, 1938 a semi-special corporation known as the Manchuria Federated Cement Company was established at Hsinking. The Company is capitalized at 1,300,000 yuan of which 325,000 yuan is paid up. The principal investors are: The Japan-Manchoukuo Trading Corporation, Mitsui & Company, the Mitsubishi Trading Company, the Okura Trading Company, the Asano Portland Cement Company, Fuku-sho & Company, the Harbin Cement Company, the Kwantung Territory Onoda Cement Mfg. Company, the Manchuria Onoda Cement Mfg. Company, the Fushun Cement Company, the Ta Tung Cement Company, the Penhsihu Cement Company, and the Manchuria Cement Company.

While endeavoring to adjust the domestic demand and supply of cement, the Company sets a standard price. Acting as liaison establishment between manufacturers and consumers, the Company is also intent upon stabilizing the cement market.

Synthetic Rubber

Synthetic rubber production in Manchoukuo is expected to get under way in 1941 with the establishment of a plant at Kirin, utilizing hydro-electric power from the Sungari power station. The firm which is known as the Manchuria Synthetic Rubber Company expects at first to produce 50 tons daily, but will later increase output to meet the rise in the demand for synthetic rubber.

Match

The match industry in Manchuria was started in 1906. During the World War match factories were established in such places as Dairen, Antung, Kirin, Mukden, Yingkow, etc. In 1925 the Swedish match interests began to exert a dominant influence over the match market in Manchuria. Many of the match companies that had existed were brought under the control of the Swedish interests. In 1931 the Chinese authorities instituted the match monopoly system and charged the Sino-Japanese Match Association with the working of the system. After the Manchuria incident, the Swedish interests applied for permission to join the association. Thereupon a match association was formed anew embracing all the entrepreneurs concerned in Manchoukuo and simultaneously public markets were established as a marketing organ. The whole amount of the capital involved was taken up by the Japanese interests.

In July, 1932 after the establishment of Manchoukuo the public markets were brought under the direct control of the Department of Finance of the new Government. The Swedish interests disposed of all their share-holdings and withdrew from the market. Match production in 1937 amounted to 327,828 boxes. Production capacity for 1939 is given at roughly 960,000 boxes. Imports amounted to 1,218,000 kilograms valued at ¥468,000 in 1938.

Table 21. MATCH MANUFACTURING COMPANIES IN MANCHURIA

				Annual capacity (Boxes containing 2,400 pocket boxes)
	Management	Locality	Capital	
Kirin Match Co.	(Japanese)	Kirin	¥ 750,000	64,000
Chinhua " "	(Manchou)	"	160,000	51,000

(Continued)

	Management	Locality	Capital	Annual capacity (Boxes containing 2,400 pocket boxes)
Chungehieh Match Co. ..	(")	"	160,000	42,400
Taifeng " " ..	(")	"	100,000	21,000
Nisshin " " ..	(Japanese)	Hsinking .	300,000	51,000
Changchun " " ..	(")	" .	116,800	51,000
Paoshan " " ..	(")	" .	115,000	51,000
Huilin " " ..	(Manchou)	Mukden ..	206,000	114,000
Tanhua " " ..	(")	Antung ..	1,200,000	64,800
Sanming " " ..	(")	Yingkow .	150,000	108,000
Shengsheng " " ..	(")	" .	100,000	90,000
Kwantung " " ..	(")	" .	100,000	63,000
Luchang " " ..	(")	Tsitsihar .	100,000	60,000
Chenhsing " " ..	(")	Hulan	300,000	30,000
Changheng " " ..	(")	Tunghua ..	200,000	19,500
Minyuang " " ..	(")	Ashiho ...	—	69,000
Dairen " " ..	(")	Dairen ...	500,000	51,847
Total 17 Cos.			4,571,000	959,947

Soda Ash

The salt fields in Kwantung Province cover an extensive area of 18,000,000 tsubo and have an annual productive capacity of about 500,000 koku. Not only is it very easy to increase output but production cost is very moderate. Further, there is an ample supply of lime, sulphate of ammonia and fuel. Thus, the country is favoured with every condition necessary for the soda industry. With the laying of the solid foundation of the salt industry in May, 1936 there was brought into being a Manchuria Soda Company under Government supervision in Kanchengtzu, Dairen. Annual capacity of the Company is 36,000 metric tons. Production in 1933 was estimated at 30,000 metric tons. A half of the capacity is intended to meet requirements in all Manchuria and the other half those in Japan and South China. The capital is ¥8,000,000, two thirds of which is paid up. Of that amount of the authorized capital, 25% each is put up by the South Manchuria Railway Company, and the Manshu Chemical Industrial Company, 35% by the Asahi Glass Company and 10% by the Shoko Glass Company.

Imports. Imports of soda ash in 1939 amounted to 96 metric tons valued at ¥19,000.

Caustic Soda

Following the development of the pulp and coloured pulp industry in Manchoukuo, the demand for caustic soda has increased. The total amount of this material required for 1939 was 8,000 tons, while that for 1940 is expected to be more than 10,000 tons. Aiming at self-sufficiency in caustic soda, supply of which was formerly solely dependent upon import from Japan the Manchuria Soda Company will try to cover the greater part of the demand for caustic soda in 1940, with products from its own plants which are under construction at Dairen, Mukden and Kaiyuan. The plants, which will commence operations by the end of 1939, will give an annual output of 3,000 tons of caustic soda at Dairen, 2,000 tons at Mukden and 4,500 tons at Kaiyuan.

In addition to these plants, the Manchuria Soda Company will establish another plant at Tumen in 1940. On completion of this plant, which will yield an annual output of 2,600 tons, the demand of caustic soda in Manchoukuo, which will be considerably increased as the pulp industry develops, should mostly be covered by products from the Manchuria Soda Company.

Gunpowder and Other Explosives

Gunpowder, ammunition and arms are manufactured by the Mukden Arsenal. Explosives for the use of mining and engineering are made by the Manchuria Mining Drugs Company, which was opened in 1919. By way of pursuing the policy of bringing under government control the manufacture and sale of gunpowder, which has an important bearing upon the preservation of peace in the country, the Civil Affairs Department of Manchoukuo has established a special concern by merging all the powder manufacturing companies throughout the country. The new company is known as the Manchurian Gunpowder Marketing Company, Limited, and under the direct supervision of the minister of civil affairs. It is capitalized at 500,000 yuan, of which 250,000 yuan is taken up by the Manchoukuo Government and the remaining half by the South Manchuria Railway Company, the Mukden Arsenal, the Penhsihu Iron Manufacturing Company, Showa Steel Works, and Manchuria Colliery Co.

Glass

The glass industry in Manchuria suddenly sprang up on the stoppage of the imports of European goods during the World War. Since the founding of Manchoukuo the demand for glass has increased considerably. Production of glasswares has expanded from ¥554,000 in 1932 to ¥1,500,000 in 1935.

The glass market in Manchoukuo is practically monopolized by the Mitsubishi concern through the Shoko Glass Company capitalized at ¥3,000,000 at Dairen and the Manchuria Shoko Glass Company, capitalized to the same amount, at Mukden. Both of these establishments are subsidiaries of the Asahi Glass Company, the largest of its kind in Japan. Production of the Shoko Glass Company in 1935 was valued at ¥3,000,000 consisting of 600,000 cases of sheet glass.

Table 16. SHEET GLASS MANUFACTURING COMPANIES

(End of Sept., 1939)					Capacity per year (Box in 100 sq. feet)
	Estab- lished	Head office	Capital (M¥1,000)	Affiliation	
Shoko Glass Co., Ltd. . .	1925	Tokyo	3,000	{ Asahi Glass Co. . . 60%	
				{ S.M.R. Co. 40%	1,200,000
Manshu Shoko Glass Co., Ltd.	1937	Mukden	3,000	Shoko Glass Co.	800,000

Bricks

The manufacture of bricks in Manchuria is very old in origin. The relics of ancient times, which are sometimes found, prove of fine quality. Black bricks, which are used at present, are of very inferior quality. They are produced chiefly in Mukden, Hsinking, Tsitshar, Taonan, etc. Those which are generally known as red bricks are manufactured at factories of a considerable size. It was over a quarter of a century ago that the manufacture of this kind of bricks was started in Manchuria. With the increase in the demand for machine-made red bricks, and the accompanying growth of new enterprises, the industry has of late appreciably developed.

The demand for bricks throughout Manchoukuo in 1935 totalled 150,000,000 pieces in Mukden and 500-600,000,000 in Hsin-

king, Dairen and Harbin and other towns combined.

There are about 60 Japanese and Manchoukuoan bricks works. Fireproof bricks are manufactured exclusively by the Dairen Ceramic Company, the Higashigaoka Factory of the Fushun Ceramic Company, the Showa Steel Works, the brick factory of the Penhsihu Iron Works, etc. The capacity of all those brick works was 40,000 metric tons in 1933 and 70,000 tons in 1935.

Exports. Manchoukuo's exports of brick and tiles amounted in 1938 to 29,000 metric tons valued at ¥1,036,000.

Earthen Ware and Porcelain. The production in Manchoukuo is still comparatively small. The major portion of the demand which is increasing rapidly, is supplied by imports from China and Japan. Since very early days, water jars and other primitive potteries have been manufactured in such places as Mukden, Fushun, Hsinking and Penhsihu.

There are several pottery and porcelain companies in Manchuria. The largest of them is the Taho Pottery and Porcelain Company, which was formerly a laboratory of the South Manchuria Railway Company. It was in October, 1920 that it was separated from the South Manchuria Railway Company and reorganized as an independent concern under the present title in Dairen. It was also the first company of the kind established in Manchuria. Capitalized at ¥155,000, the Company turns out kitchen utensils for the Manchoukuoans and also insulators. The annual productive capacity is 4,500,000 pieces, valued at ¥220,000. All the rest are small concerns. Principal ones are as follows:—

Huitung Ceramics Co. (Capacity, 2,800,000 pieces, value ¥100,000); Adachi Ceramics Works (Capacity 3,600,000 pieces, value ¥140,000); Tung Sheng Ceramics Works (Capacity 4,000,000 pieces, value ¥160,000); Liaotung Ceramics Works (Capacity 2,800,000 pieces, value ¥90,000).

Imports. The import of potteries and glassware for electrical or industrial uses amounted to 8,227,000 kilograms value ¥2,197,000 in 1938.

MACHINERY AND ENGINEERING

Metals

Metallic Magnesia. There are inexhaustible resources of magnesite in the neighbourhood of Tashichiao. The industries for

its utilization have, therefore, a very bright future. At present there are three branches of this industry, viz., (1) Manufacture of fire-proof things, (2) manufacture of building materials and (3) manufacture of metallic magnesia. The first two are undertaken by the South Manchuria Mining Company, which was established in 1918 with a capital of ¥600,000. The last, or the manufacture of metallic magnesia is carried on by the Japan-Manchoukuo Magnesium Company, which was jointly established in 1919 by the South Manchuria Railway Company, the Sumitomo interests and the Rikagaku Kenkyusho (Physico-Chemical Institute) and other organizations. It is capitalized at ¥7,000,000, of which ¥3,500,000 was paid-up in 1937. The newly founded company, whose plant with an annual productive capacity of 350 metric tons is situated at Ube City, Yamaguchi Prefecture, intends to be a large factor in supplying metallic magnesia to Japan by acquiring raw materials from Manchoukuo. As the first step towards that end, the Naoetsu plant of the Rikagaku Kenkyusho with an annual productive capacity of 150 metric tons was purchased by the Company.

Aluminium. Aluminium manufacturing in Manchoukuo holds out bright prospects. Raw materials for the manufacture of aluminium, particularly alumina shale, have been found in fairly large quantities at Fuchow, Yentai, Chinchou, Penhsihu and in other districts.

There are two aluminium companies in Manchoukuo. One of them is the Japan-Manchoukuo Aluminium Company, which was established in October, 1933 with a capital of ¥10,000,000 of which ¥7,500,000 was paid-up in 1937. The other is the Manchuria Light Metal Manufacturing Company, which was established in Nov., 1936. It is capitalized at M¥25,000,000, of which ¥6,250,000 was paid-up in 1937. M¥10,000,000 is taken up by the Manchoukuo Government M¥14,000,000 by the South Manchuria Railway Company and M¥500,000 by the Sumitomo Company and M¥40,000 by the Japan Electric Industry Company and M¥50,000 each by the Japan Soda Manufacturing Company and the Japan-Manchoukuo Aluminium Company. The new company is established at Fushun.

About 60 per cent of the production cost will be spent for electric power, which will be supplied by the projected national

hydraulic electric power station, to be established on the upper reaches of the Second Sungari. The Government is planning to erect a second aluminium manufacturing plant in Kirin.

As bauxite, raw material of aluminium, is mined near Yentai, alumina will be produced at the Fushun factory, which will be sent to Kirin, where aluminium will be produced at the projected plant. It is estimated that 2 tons of alumina will be produced from 8 tons of bauxite and 1 ton of aluminium from 2 tons of alumina.

Machinery and Tools Industry

With the launching of the industrial programmes in Manchoukuo there has been a growing demand for machine tools. Several companies are under consideration to be established in the country, while those already organized are operating at full capacity. It seems, however, that for many years to come the country must rely on foreign imports of machine tools to meet the heavy domestic demand. The largest suppliers of machine tools have been the United States and Germany.

Among the large purchasers of machine tools are the South Manchuria Railway Company and the Showa Steel Works. The South Manchuria Railway Company imports yearly a large amount of heavy machine tools such as big lathes, drilling machines, hydraulic hammers and presses for keeping in repair its rolling stock and other equipment. The soya bean oil industry also is requiring amounts of fabricating machinery for converting steel plate into storage tanks. The chemical and mining industry will not only require ore and more tools and machinery for direct working of those industries, but also more tools and machinery for the repairs and upkeep of the chemical and mining machinery.

The Showa Steel Works has a four year production plan whereby present output of pig iron will be considerably increased. Since pig iron is a good barometer of industrial affairs of a country the implication is that Manchoukuo will need increasing quantities of machine tools and machinery for working up into fabricated products in metal raw materials.

Imports from the United States of plain steel and metal materials are increasing and this implies imports of larger quantities of machinery to work into shapes. The Manchurians generally are

acquiring the industrial attributes of modern civilization rapidly. At first using chiefly light steel for roofs and sidings of houses, they are rapidly using more forms of heavy steel, such as structurals, for modern hospitals and office buildings. The increase use of heavy steel implies a greater use of heavy machinery for manufacture into articles of usefulness.

The building of good roads are under way and their expansion will take large quantities of road building machinery. More and more machines will be needed at the port of Dairen for unloading ships and for keeping ships in repair.

Imports of various machineries, tools and vehicles are shown in the following table:

Table 35. IMPORTS OF MACHINERY AND TOOLS, VEHICLES AND VESSELS

	(In MY1,000)						
Machinery & Tools:							
Agricultural Machinery, Tools and Implements, and parts thereof ..	1933	1934	1935	1936	1937	1938	1939
Motors, Dynamos or Generators	122	158	606	987	2,306	3,939	9,136
Transformers	590	2,584	1,621	2,702	3,347	7,960	17,270
Electric Fixture & Fitting, pumps, and parts thereof	259	1,049	1,038	1,587	2,444	4,807	6,969
Machines, Sewing, Knitting, and Embroidering, and parts thereof	581	961	860	1,261	2,310	8,370	14,345
Machinery, Textile and parts thereof	395	419	1,121	629	981	930	1,215
Office or Sales Machines, and parts thereof	270	518	1,549	809	1,073	—	—
Prime Movers, and parts thereof	300	261	349	560	1,489	—	—
Hand Tools	904	1,928	2,002	2,623	4,746	*185	*39
	801	1,672	1,901	2,185	3,232	5,563	13,762
Vehicles & Vessels:							
Aeroplanes, Hydroplanes, and all other Flying Machines, and parts thereof	1,882	728	1,373	881	1,682	—	—
Railway or Tramway Materials	6,381	8,678	12,978	12,668	11,282	} 74,594	} 127,812
Railway and Tramway Carriages or Wagons	1,814	3,088	1,068	1,237	972		
Locomotives and Tenders	2,110	7,684	11,429	11,839	11,079		
Vehicles, and parts thereof	128	299	1,021	680	1,618		
Motor Trucks and Buses (incl. Chassis)	4,316	3,030	3,048	3,722	6,494	—	—
Other Cars (incl. Chassis)	2,435	3,278	2,648	2,748	3,943	—	—
Parts of Motor-Cars and Motor Tractors (excl. of Tyres and Tubes) ..	1,557	1,865	2,645	3,099	6,242	—	—
Bicycles	104	151	181	166	144	596	1,181

(Continued)	1933	1934	1935	1936	1937	1938	1939
Bicycles parts and accessories	994	1,356	2,895	2,018	2,309	5,288	7,158
Motor-cycles	93	98	149	113	160	—	—
Total incl. others	321,243	59,002	74,457	78,468	112,307	241,158	395,205

Note: * Exclusive of internal combustion and steam engines.

The South Manchuria Railway Works. The South Manchuria Railway Works which has for its object the manufacturing, assembling and repairing of vehicles, was established in Shakako in 1908 and opened to business in 1911. The works, which cover an area of 600,000 tsubo, are provided with water works of their own and consists of 70 blocks with an area of 19,000 tsubo. They have a capacity of accommodating 27 locomotives, 36 coaches, and 130 goods cars at the same time.

The Dairen Machinery Works. The Dairen Machinery Works was established in 1918 with a capital of ¥2,000,000 with the object of executing orders placed with the South Manchuria Railway Company. The company has since so much developed that its capacity is now about ten times the scope at the time of the establishment. The list of its specialities consist of rolling stocks, iron bridges, machinery, pipes for the use of water works, bean-oil manufacturing machines, rollers for road construction and improvement, machines for generating oxygen gas, electric cars, the bodies of automobiles, etc. The market for these articles is so extensive that the Company figures prominently among the Japanese enterprises in Manchuria. The capital of the company in 1938 amounted to ¥10,000,000 of which ¥8,000,000 was paid up.

Mukden Arsenal. The Mukden Arsenal was established in 1932 with a capital of ¥2,000,000 in the form of a joint-stock corporation. The capital was taken up by the Mitsui Bussan Kaisha and the Okura Shoji Kaisha. It is engaged in the manufacture of arms and ammunitions, gunpowder and its materials, and the manufacture and repair of various machines and tools. The total capital (fully paid up) amounted to ¥4,600,000 at the end of 1939.

Anshan Steel Material Company. It was for the purpose of meeting a swift increase in the demand for rails in Manchuria that the Anshan Steel Material Company was brought into being in July, 1932 by men interested in the Nippon Rail Company. It was organized with a capital of ¥5,000,000, of which ¥3,000,000 is

paid up. Furnished by the Showa Steel Works with steel ingots and slabs, the Company is engaged in the manufacture of trucks for light railways to the estimated amount of 3,000 metric tons.

The Manchu Manufactory. The Manchou Manufactory was established in 1934 with a capital of ¥1,500,000 (fully paid up) by purchasing the former Tafeng Iron Works at Mukden. It has for its object the manufacture of casting in general vehicles and machinery and tools. It is expected to show developments in the circles of the iron industry of Manchuria by meeting the requirements for rolling stocks and machines and tools for water works and gas heaters. The capital of the Co. in 1938 was ¥20,000,000 of which ¥8,600,000 is paid up.

The Manchu Sumitomo Steel Pipe Company. The Company was established in September, 1934 with a capital of ¥10,000,000 fully paid up. With its plant set up within the compound of the Showa Steel Works, the Company intends to manufacture high grades of steel pipes with materials supplied by the Showa Steel Works.

Motor Car Industry

For several years past projects were launched for the establishment of a motor car industry in Manchuria, but the actual stage of production had not yet been reached in 1940. Whatever progress that had been witnessed was centered in the assembling of automobiles from imported parts by the Dowa Automobile Company which was established in March, 1933 with a capitalization of ¥6,200,000, invested in by the Manchoukuo government, the South Manchuria Railway Company and by the leading motor car manufacturers in Japan. In the spring of 1939 this company was merged into the newly established Manchuria Automobile Company, capitalized at ¥100,000,000 fully subscribed by the Manchuria Industrial Development Corporation. The new company will virtually monopolize the motor car industry in Manchuria, and a large plant will be erected at Antung. Mr. Soji Yamamoto, president of newly-formed Manchuria Automobile Manufacturing Company, was for many years identified with the Nissan Motor Car Company, of Japan, manufacturers of Nissan passenger cars and trucks and the light passenger cars and vans known as Datsun and "Nissan." According to Mr. Yamamoto the new auto plant

under consideration will give employment to 100,000 workers, many of whom will be recruited from Japan.

Aircraft Industry

The first steps towards the establishment of an aircraft industry in Manchoukuo were taken on June 18, 1938 by the formation of the Manchuria Aircraft Manufacturing Company, capitalized at MY20,000,000 invested in entirely by the Manchuria Industrial Development Corporation. The company, which is a special corporation registered with the Manchoukuo Government, comprises a motor manufacturing and body manufacturing departments. The existing Manchuria Air Transport Company's own plant was merged to create the motor department, and a body building factory will be established on an area of 150,000 to 200,000 tsubo near Huangkutun in Fengtien Province.

Shipbuilding

The shipbuilding industry, still in an infant stage of development, is centered at Dairen. Two 3,000 ton freighters were expected to be completed in 1940 at the Dairen Dockyards to the order of the Dairen Kisen Kaisha. It is the first time that vessels of this size is under construction in Manchuria.

Munitions

There are eight plants in Manchuria connected with the manufacture of various munitions. With the object of preventing the leakage of military secrets the Government of Manchoukuo promulgated in 1939 a series of regulations to govern the newly-created Munitions Supervision Commission. The eight companies designated as munitions plants by the Government are the following: the Mukden Arsenal, the Manchuria Aircraft Manufacturing Company, the Dowa Motorcar Manufacturing Company, the Manchuria Machine and Implements Company, the Manchuria Arsenals, the Manchou-Mongol Woollen Manufacturing Company, the Showa Steel Works and the Penhsihu Iron Collieries.

Establishment of a large powder manufacturing company was decided upon in the spring of 1940 by the Mukden Military Arsen-

al and the Manchuria Industrial Development Corporation. The projected firm will be named the Manchuria Powder Manufacturing Company, and will be capitalized at 20 million yuan. It will be formed as a special corporation under Manchoukuo Company law. The investment will be shared by the following interests: 60 per cent by the Mukden Military Arsenal (Hoten Zohei Sho), and 20 per cent each by the Manchuria Industrial Development Corporation and the Manchuria Mining Development Company.

The rapid progress of the Five Year Industrial Plan requires huge quantities of powder, especially for mining development. Powder is chiefly manufactured at the Fushun Powder Plant and the Mukden Military Arsenal which are working at full capacity, but the output falls far short of meeting the demand. The projected firm is expected to take over the powder plants at Mukden, Antung, Fushin and Liaoyang, all belonging to the Mukden Military Arsenal and it will also undertake to manufacture explosives on a large scale under an up-to-date system.

The Manchuria Powder Sales Company, capitalized at 500,000 yuan will be also incorporated with the Manchuria Powder Mfg. Co. Thus the latter firm will also come to have control over the import and sales of explosives in Manchoukuo.

Hide and Leather Industry

This line of industry has not yet made noticeable developments in Manchuria. Cow hides are not only inferior in quality but quite limited in production. The only sign of activity shown by this industry is that about 200,000 pieces of horse hide are yearly exported to Japan. There is only one company of considerable size manufacturing hides and leather, namely, the Japanese-Manchu Hide and Leather Industrial Company. It is capitalized at ¥3,000,000 one-fourth of which is paid-up.

Imports of hides and skins in 1938 amounted to 1,577,000 kilograms valued at ¥1,834,000. Exports of hides and leather amounted to 737,883 kilograms valued at ¥1,208,000 in the same year.

Tung Tobacco Co. Ltd., as well as its factory, are located in Mukden. It has another factory in Yingkow, completed in 1939 and now in operation.

A. Lopato Sons, Ltd. The company is a Manchoukuo corporation with a capital of 3,500,000 yuan. It is a subsidiary of a British Company of the same name located in Hongkong, which company in 1913-1914 purchased the business formerly under Russian management. The capital of A. Lopato Sons, Ltd., in April 1914 was 150,000 roubles and it was increased in December 1919 to 1,000,000 roubles. The company was reorganised in July, 1936, since when the present status has been maintained.

Toa Tobacco Company. The Company is capitalized at ¥30,000,000 (16,125,000 paid up). With its head office in Tokyo, the Company has factories in Mukden, Dairen, Yingkow and Tientsin, Taiyuan and Shanghai.

Manchu Tobacco Company. The Company was founded in Tokyo in January, 1925. It is capitalized at ¥12,000,000, of which ¥7,920,000 is paid-up. The total annual capacity of its two factories at Hsinking and Harbin combined is 4,500 million cigarettes in 1940.

In the first year of the five-year plan, or in 1937, leaf tobacco production amounted to 3,192 metric tons from a crop area of 2,390 chobu, showing an increase of 222 tons with 140 chobu as against the plan. Under the revised five-year plan, tobacco production in 1938 was to be increased to 5,550 tons on an area of some 4,500 chobu. Government appropriations for tobacco production in 1938 was ¥2,500,000 as compared with ¥800,000 in 1937.

CHAPTER XXI

ELECTRIC AND GAS INDUSTRIES

The present capacity for the generation of electric power in Manchuria is estimated at roughly 550,000 K.W., derived mostly from thermal power plants. With the completion of the Five Year Plan in 1941 generation facilities are expected to rise steeply to 2,600,000 K.W.

The Manchoukuo Government, believing that the great water system such as the Sungari, Liao, Yalu and Tumen Rivers, which rise in the Long White Mountain and the Great and Little Hsingan Mountains, are capable of utilization for the generation of an enormous volume of power, started surveys in 1934 with a view to supplying the country with abundant power at low prices on a permanent basis. The Sungari River No. 2, the Taitzeho systems, the Hunkiang system and the Mutankiang system were investigated first and then surveys were conducted at other rivers. The rivers investigated were found to possess even greater potentialities for power generation than anticipated. As many as fifty points in the new Empire are now considered suitable for the operation of hydro-power plants with a maximum capacity of more than 6,000,000 kilowatts and an average output of 3,250,000 kilowatts. With rivers remaining to be investigated taken into consideration, it is believed that the hydro-power resources of the country are enormous.

Table 1. ELECTRIC-POWER GENERATION POTENTIALITIES OF PRINCIPAL RIVER SYSTEMS

	Output	
	Average (kilowatts)	Maximum (kilowatts)
Sungari River No. 2	850,000	1,780,000
Yalu River (including Hunkiang)	1,133,000	1,913,000
Mutankiang (including Pilteng Lake)	383,000	686,000
Luan River	393,000	772,000
Tumen River	71,000	141,000
Nonni River	209,000	335,000
Huma River	100,000	200,000
Liao River	36,000	60,000

The management of the electric industry is almost wholly under the control of the semi-official Manchuria Electric Company which is capitalized at 160,000,000 yuan and charged with the operation of coal power plants and the transmission of electricity. Exceptions are the hydro-power plants on the Second Sungari and the Yalu Rivers and on Lake Pilteng, which are either directly supervised by the government or with other interests.

Historical

Dating back fifteen years behind that of Japan, the history of electric enterprises in Manchuria begins in October 1902, when Czarist Russia, having commenced the construction of the city and the harbour of Dairen for the purpose of developing it into a base of commercial activities in the Far East, established a power plant on Hama-cho, the first ever to be built in Manchuria. The plant was, however, constructed on a small scale, generating merely 260 kilowatts and supplying electricity to 30,000 lamps.

Along with other industries in Manchuria, the number of electric enterprises, which have shown remarkable development, has greatly increased during the past three and half decades. The degree of their development may be divided into the following three states: 1st stage, After the Russo-Japanese War up to 1911; 2nd stage, 1912 to 1930; 3rd stage, 1931 to the present.

First stage. When the South Manchuria Railway Company was established in April 1907 with the important mission of developing Manchuria, the Company immediately undertook both to expand the electrical equipment together with other attached enterprises along the S.M.R. line, and to build new ones. First of all, in November of the same year, it enlarged the Dairen power-plant, following which it established new plants in Fushun and Mukden in 1908, in Changehun (now Hsinking) in 1910, and in Antung in 1911, and began supplying electricity to the public.

At Port Arthur (Ryojun) there was electrical equipment (used by the Russians for charging barbed wire entanglements and other defensive measures) generating 120 kilowatts. When Japanese troops occupied Port Arthur in 1905, this equipment was repaired, and light was supplied both to government offices and to the general public. Later, when with the development of the city, the supply became short, the Kwantung Government estab-

lished a new generating station of 500 kilowatts, and commenced its operation in 1907. New plants were also built in Chinchou, Pitzuwo and Pulantien.

The development of Japanese electric enterprises along the S.M.R. line and in the Kwantung Leased Territory provided great impetus for the establishment of Manchurian electric enterprises; new companies were founded in Harbin (1905), Manchouli (1906), Kirin (1907), Mukden (1909), and in Changehun (1911). Thus by 1911 almost all the principal cities of Manchuria were supplied with electricity.

Second Stage. Beginning about 1912, many of the existing Japanese plants were enlarged and, owing to the distribution of light to towns and villages located between the principal cities and to a general increase in the demand for electricity, new stations were established. Furthermore, along with the improvement of business in Manchuria due to the outbreak of the World War in 1914, electric enterprises continued to show favourable development. Marking the beginning of the so-called "long-distance current supply period," the South Manchuria Electric Company was established in June 1926, and all the electric enterprises along the S.M.R. line were brought under its management.

The favourable development of the Japanese enterprises gave further stimulus to the establishment of many small Manchurian electric companies in various parts of the country. The latter, however, with the exception of two or three, showed poor business results because of the shortage of funds, the lack of technical skill and knowledge, and extortions by both militarist and Government officials. About this time the movement for the recovery of rights and interests acquired by foreigners in China, which had spread into Manchuria from China Proper, gained momentum and severe pressure was brought to bear upon the Japanese electric enterprises, in full disregard of the weak economic power of Manchuria and of the nature of public utilities.

The Japanese electric enterprises were refused the right to supply light and power to Manchurian territory. Being compelled to confine their business to the narrow strip of land along the S.M.R. line wherein the demand for electricity had almost reached a saturation point, the future of Japanese enterprises looked none too bright.

Third Stage. However, with the birth in the wake of the Manchurian Incident of the new State of Manchoukuo in 1932, the situation changed completely, and the electric industry began to see the light of future development. Fully realizing the basic importance of electric enterprises in the development of industries in the new Empire, the Manchoukuo Government, in an announcement made both at home and abroad in March 1933 on its fundamental policy for the economic reconstruction of Manchoukuo, declared that electric enterprises will be placed under controlled management and power will be supplied abundantly and cheaply.

Thus the political impediment to the development of Japanese enterprises was removed and, with the growing desire of the Manchoukuo Government for Japanese support in management and technical skill, an opportunity matured both for the expansion of existing enterprises and for the establishment of new ones. A proposal to merge all the electric enterprises in Manchuria was brought up by the Japanese and Manchurians concerned, and finally culminated in the establishment in November 1934 of the Manchuria Electric Company, capitalized then at ¥90,000,000, under joint Japanese-Manchoukuo investment. The greatest institution to come under the new scheme was the South Manchuria Electric Company, a subsidiary of the South Manchuria Railway Company, which since the merger has come to be known as the Dairen branch of the Manchuria Electric Company. The new Company aims to effect a complete control and a unification of the electric industry in the country.

Distribution of Electricity in Manchuria

Despite the rapid development of electric enterprises in Manchuria in recent years, electricity for lighting is still used only by a small portion of the population. Practically all the peasants, who comprise the greater part of the population, are without electric light. According to an investigation made by the Manchuria Electric Company, 338,265 households in Manchuria (including the Kwantung Leased Territory), representing only 5.9 per cent of the total number of households (5,753,841), were supplied with electric light at the end of 1935. The total number of lamps was 2,334,050, or 6.7 lamps per hundred of population (34,648,630), in striking contrast to 59.4 lamps per hundred of population in

Japan. The number of lamps installed in the city of Osaka alone, which had 2,753,751 lamps at the end of 1934, is larger than that of the whole of Manchoukuo.

As reasons for the small use of electricity may be mentioned the low density of population and the low standard of living of the masses who are mostly peasants who get up and start working at sunrise and go to sleep at sunset. The low standard of living of the populace, however, was not the sole cause of the small use of electricity, for there were also political reasons. The former Northeastern military régime, swayed by a strong sentiment of anti-foreignism and jealous of the growing prosperity of Japanese electric enterprises in Manchuria, out of a sheer desire to cause economic losses to them, had small generating stations established indiscriminately at various places to engage in unfair competition with Japanese interests. These new Manchurian electric companies were not only economically unsound but were also handicapped in business because no improvements were made in their facilities nor any attention paid towards popularizing the use of electricity among the masses. The result was a heavy burden upon the consumers who also had to suffer from uncertain and irregular service. The wide-spread use of electricity and the high state of development attained by the electric industry in the Japanese-administered Kwantung Leased Territory and the S.M.R. Zone offered a striking contrast to the condition in the territory under the control of the former Northeastern régime. The following table shows the increased use of electricity since 1936.

Table 2. STATISTICS OF POWER GENERATION

	No. of Stations	Generation capacity (k. w.)	Supply (1,000 KWH)			Consumption (1,000 KWH)			
			Generated	Purchased	Total	Sold		Lost*	
						%		%	
1936									
1st	20	172,111	277,122	108,524	385,645	309,325	80.0	76,320	20.0
2nd	21	170,392	294,769	114,824	409,593	323,685	79.0	85,908	21.0
1937									
1st	34	219,019	324,363	130,484	454,848	369,334	81.0	85,513	19.0
2nd	41	223,452	339,300	184,024	523,324	421,817	78.6	101,508	11.4
1938									
1st	42	229,275	407,014	214,004	621,017	508,112	82.0	112,905	18.0
2nd	40	232,668	424,639	247,272	671,911	—	—	—	—

Note: "1st" & "2nd" represent first half & second halves of each year, respectively.
* Includes losses, from transmission and companies' own utilization.

Table 3. ELECTRIC POWER CONSUMPTION CLASSIFIED

	Light			Power		Heat		Total incl. others (1,000 KWH)
	No. of consumers (1,000)	Lights installed (1,000)	Consumption (1,000 KWH)	No. of consumers	Consumption (1,000 KWH)	No. of consumers	Consumption (1,000 KWH)	
1936								
1st	256	1,885	52,119	6,560	266,461	4,848	3,126	322,159
2nd	294	2,103	45,608	7,151	285,042	5,531	2,804	338,368
1937								
1st	336	2,242	58,909	7,502	330,010	5,645	3,474	392,950
2nd	369	2,395	54,888	8,156	407,281	6,421	3,204	466,366
1938								
1st	430	2,626	68,335	9,274	487,323	7,851	4,220	560,330
2nd	495	2,879	—	—	—	—	—	—

Table 4. ELECTRIC POWER CONSUMPTION CLASSIFIED BY INDUSTRIES

(% against grand total. Index: 1st half, 1936=100)

	Textile		Metallic		Machinery		Ceramic		Chemical		Bean-oil	
	Index	%	Index	%	Index	%	Index	%	Index	%	Index	%
1935												
1st	8	0.9	29	11.0	49	6.4	69	4.6	33	18.8	—	—
2nd	101	7.8	73	18.0	68	5.8	59	2.6	87	28.7	57	1.2
1936												
1st	100	6.4	100	21.0	100	7.3	100	3.7	100	27.8	100	1.7
2nd	112	6.7	125	24.5	71	4.9	100	3.5	102	27.0	54	0.9
1937												
1st	128	6.4	119	20.1	74	4.4	109	3.3	112	24.9	104	1.5
2nd	132	5.5	170	23.4	96	4.5	133	3.3	112	20.3	46	0.5
1938												
1st	164	6.3	180	22.4	120	5.3	122	2.7	150	26.4	118	1.2

	Lumbering & wood-working		Provision		Mining		Electric		Total incl. others	
	Index	%	Index	%	Index	%	Index	%	Index	%
1935										
1st	—	—	41	2.9	17	0.5	89	28.7	56	100
2nd	120	1.3	83	3.9	87	1.6	86	18.4	85	100
1936										
1st	100	0.9	100	4.5	100	1.5	100	18.1	100	100
2nd	142	1.2	154	5.7	123	1.7	109	18.3	104	100
1937										
1st	126	3.1	188	5.8	165	2.5	138	20.6	124	100
2nd	183	1.3	223	5.8	295	3.0	198	23.4	152	100
1938										
1st	160	0.9	236	5.5	374	3.4	229	24.6	180	100

Table 5. ELECTRIC POWER CONSUMPTION CLASSIFIED BY INDUSTRIES (Consumption in 1,000 KWH)

	Textile Industry						Metallic Industry					
	Ordinary		Contract		Total		Ordinary		Contract		Total	
	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion
1935												
1st	362	1,767	6	11,593	368	1,333	179	335	4	1,304	183	16,390
2nd	447	2,496	8	15,182	455	17,678	288	1,124	6	39,757	294	40,881
1936												
1st	443	2,839	10	14,378	453	17,217	310	744	12	55,306	324	56,050
2nd	510	3,218	12	15,997	522	19,215	339	1,562	12	54,829	351	70,449
1937												
1st	547	3,664	10	18,362	557	22,026	293	1,106	13	65,367	409	66,473
2nd	634	4,102	12	18,539	646	22,641	336	1,144	16	94,424	352	95,568
1938												
1st	699	4,594	13	23,510	712	28,104	416	1,247	16	100,131	432	101,378

	Machinery Industry						Ceramic Industry					
	Ordinary		Contract		Total		Ordinary		Contract		Total	
	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion
1935												
1st	485	1,276	7	8,323	492	9,599	58	728	6	6,187	64	6,915
2nd	625	2,625	10	10,597	635	13,222	44	1,341	6	4,646	50	5,987
1936												
1st	660	1,825	12	17,761	672	19,586	62	687	8	9,392	70	10,079
2nd	684	2,446	12	11,506	696	13,952	46	1,170	8	8,857	54	10,027
1937												
1st	749	2,073	17	12,430	766	14,503	68	1,115	9	9,851	77	10,966
2nd	762	2,784	16	15,686	778	18,470	58	1,735	10	11,524	68	13,259
1938												
1st	854	3,268	16	20,326	870	23,594	126	1,672	9	10,526	135	12,198

	Chemical Industry						Bean-oil Industry					
	Ordinary		Contract		Total		Ordinary		Contract		Total	
	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion	Con- sum- ers	Con- sum- p- tion
1935												
1st	257	1,031	13	27,133	270	28,164	—	—	—	—	—	—
2nd	204	971	11	64,089	215	65,060	84	282	5	2,374	89	2,656
1936												
1st	210	1,442	12	72,817	222	74,259	103	400	5	4,240	108	4,640
2nd	210	1,375	12	76,539	222	77,914	140	401	5	2,101	145	2,502
1937												
1st	199	1,708	16	80,898	215	82,606	135	610	5	4,356	140	4,966
2nd	213	1,967	16	80,671	229	82,638	162	496	5	1,650	167	2,146
1938												
1st	236	2,602	25	117,056	261	119,658	163	1,379	5	4,064	168	5,442

(Continued)

(Consumption in 1,000 KWH)

	Lumbering & Wood-working Industry						Provision Industry					
	Ordinary		Contract		Total		Ordinary		Contract		Total	
	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption
1935												
1st ...	—	—	—	—	—	—	1,183	2,638	6	1,737	1,189	4,375
2nd ...	201	2,674	1	76	202	2,876	1,573	5,476	8	3,308	1,581	8,784
1936												
1st ...	229	2,174	2	218	231	2,392	1,612	6,451	11	4,538	1,623	10,589
2nd ...	210	3,033	2	367	212	3,400	1,828	8,334	16	8,021	1,844	16,355
1937												
1st ...	259	2,467	1	544	260	3,011	1,928	10,040	23	9,177	1,951	19,217
2nd ...	273	3,662	5	713	278	4,375	2,093	8,260	40	15,256	2,133	23,516
1938												
1st ...	303	3,022	5	786	308	3,808	2,530	9,241	47	15,945	2,577	25,186
	Mining Industry						Agricultural & Aquatic Ind.					
	Ordinary		Contract		Total		Ordinary		Contract		Total	
	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption
1935												
1st ...	12	19	2	673	14	692	21	23	1	456	22	479
2nd ...	36	176	4	3,388	40	3,564	16	25	—	493	—	518
1936												
1st ...	40	195	6	3,900	46	4,095	27	71	1	639	28	710
2nd ...	44	101	7	4,965	51	5,066	21	415	—	816	—	1,231
1937												
1st ...	19	268	12	6,511	31	6,779	64	256	2	549	66	805
2nd ...	17	309	15	11,823	32	12,123	43	489	—	674	—	1,163
1938												
1st ...	17	156	16	15,115	33	15,271	137	364	2	523	139	887
	Printing & Bookbinding		Electric Ind.		Total incl. Others							
	Ordinary		Contract		Ordinary		Contract		Total			
	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption	Consumers	Consumption		
1935												
1st ...	—	—	23	42,910	5,790	20,276	115	129,164	5,905	149,440		
2nd ...	362	572	23	41,618	6,134	25,589	120	200,439	6,254	226,028		
1936												
1st ...	374	636	24	48,334	6,404	25,895	156	240,826	6,560	266,721		
2nd ...	391	721	24	52,728	6,983	30,983	168	254,675	7,151	285,608		
1937												
1st ...	402	826	23	67,109	7,297	33,448	205	297,211	7,502	330,659		
2nd ...	415	848	24	95,783	7,899	35,344	257	372,627	8,156	407,971		
1938												
1st ...	456	909	20	110,993	8,982	37,709	292	449,860	9,274	477,569		

The electric light rate in Dairen, Antung, Hsinking and Mukden, where electricity is supplied by the Manchuria Electric Corporation, is M¥2.00 per 10 kilowatt-hours. This is by no means high when compared with the rates in principal cities of Japan and China, the rates Kyoto being ¥1.85 per 10 kw.; Tokyo ¥1.95; Nagoya and Kobe, ¥2.05; Yokohama, ¥2.20; Osaka, ¥2.41; Shanghai, \$1.80; Tientsin, \$2.50, and Peking, \$2.20. (\$1.00 is equivalent to about ¥1.06; M¥1.00 is equivalent to ¥1.00).

The rates of the Manchurian electric companies, on the other hand, were extremely high, due to disorderly management and small distribution of electricity. This fact proved to be the main obstacle to the spread of electricity. However, with the establishment of the Manchuria Electric Corporation through the amalgamation of numerous firms, a gradual unification of rates on a rational basis was undertaken, taking into consideration the geographical condition and the state of demand in each district. It is stated that the unification of electric rates throughout Manchuria will be completed within five years.

Since the Manchurian Incident, there has been a marked increase in the amount of electricity generated, which in 1935 totalled 1,084,000,000 kilowatt-hours, representing a twofold increase as compared with the 500,000,000 kilowatt-hours in 1930. At present 98 per cent of electricity in Manchoukuo is generated by caloric heat, the amount of coal consumed for this purpose running up as high as 1,000,000 tons a year. With the development of various industries in the future, the demand for electric power is bound to increase. To meet this increased demand by caloric power would mean the consumption of an enormous amount of coal annually, which would not be desirable even for a country such as Manchuria, which is blessed with almost inexhaustible coal deposits. The Government, therefore, is planning to harness the vast hydraulic resources of the country, which, it is estimated, are capable of producing constantly a supply of 1,500,000 kilowatt-hours of electricity. For this purpose it has since 1935 been undertaking an exhaustive investigation of hydraulic resources under a ten-year plan. A plan for the development of hydroelectric industry under the State management is in fact already reported to have been decided in conjunction with the new five-year industrial development plan, which is being executed at a

total expenditure of some two billion yen.

The electric industry of Manchoukuo, as the foregoing analysis shows, is yet in an undeveloped state when it is considered that the percentage of electric consumers is only 5.9 per cent of the total population, while the number of people residing in the districts supplied with electricity is as low as 1.7 per cent of the entire nation. However, as the economic standard of the masses rises with the development of industry, the electric industry, under the management of the Manchuria Electric Company and the supervision of the Manchoukuo Government, should, in the near future, carry the light of civilization the length and breadth of the Empire. The following are subsidiary companies of the Manchuria Electric Company.

Table 6. SUBSIDIARY COMPANIES OF THE MANCHURIA ELECTRIC CO.
(June, 1939)

Co.	Capital (M¥)	Total Shares	Held by the Manchuria Electric Co.	
				%
Wafangtien Electric Light Company	200,000	4,000	2,200	55.0
Tashihchiao Electric Light Company	300,000	6,000	3,150	52.5
Kaiyuan Electric Company	500,000	10,000	5,020	50.2
Tatung " "	2,000,000	40,000	21,750	54.5
Chengchiatun " "	300,000	6,000	3,734	62.0
Tunhua " "	1,000,000	20,000	17,858	90.0
Peian " "	1,000,000	20,000	18,608	93.0
Ilan " "	90,000	1,800	1,300	72.0
Tsienkouchi " "	100,000	2,000	1,386	69.5
Manchouri " "	140,000	2,800	1,400	50.0
North Chosen Associated Electric Company ..	17,750,000	355,000	25,980	69.0
Manchuria Electric Chemical Industrial Co. ..	30,000,000	600,000	200,000	33.3

The Second Sungari Power Project

The Second Sungari power project, upon completion at the end of 1942, will have a total annual generating capacity of 2,600 million kwh., or more than double the annual output for the whole of Manchuria in 1939. It is located at Ta-feng-man, 21 kilometers upstream from the city of Kirin. The Second Sungari waters a basin of 43,000 square kilometers. Its maximum flood discharge is 10,000 cubic meters per second, its mean annual discharge 16,200,000,000 cubic meters and its minimum discharge 40 cubic meters per second. The dam is of the concrete gravity type with

a height of 81 meters and a length of 1,100 meters, the volume of concrete necessary being 1,900,000 cubic meters.

The reservoir upon completion will have a length of 170 kilometers, a circumference of 2,000 kilometers and a total surface area of 545 square kilometers, or approximately four-fifths that of Lake Biwa, in Japan. The maximum depth will be 74 meters and the capacity 11,000 million cubic meters. The turbo-generators of the power plant in the initial stage will be six in number generating 60,000 kw. each, but in the final stage an additional four sets developing the same amount of kilowatts each will be installed, the total generating capacity thus amounting to 600,000 kw. The annual generating power will be 2,600 million kwh.

Construction estimates for this large project run up to ¥100,000,000. The project is of two-fold importance, because, in addition to hydro-electric generation an area of 72,000 Japanese cho (176,000 acres) along the lower reaches of the river, which is now a waste land, can be irrigated by the artificial lake for the cultivation of farm crops, including rice, while a total of 160,000 Japanese cho (392,000 acres) will be released from the ravages of floods during the rainy season.

The generators for the power plant are being supplied by the United States, Germany and Japan. In the spring of 1940 the Westinghouse Company supplied the first of three water wheels and three generators, costing roughly ¥7,500,000 and the rest were expected at short intervals. Three generators were ordered from Otto Wolff of Germany and have since been delivered in sections. Two generators placed with makers in Japan were to be delivered at the beginning of 1942. The construction cost of the Sungari power plant breaks down to approximately ¥230 per kilowatt.

In June 1940 construction had progressed to the point where the foundation work had been completed and the ferro-concrete skeleton of the generating plant partly erected. The so-called first stage construction calling for the generation of 180,000 kw. is scheduled to be completed in May 1942, while by the end of the same year the entire plant is expected to be built.

Yalu River Project

The Yalu River power plant is a joint undertaking of Manchoukuo and Chosen. The maximum capacity of the Yalu River

facilities is set at 1,600,000 kilowatts. The first stage work was started at a cost of ¥100,000,000, calling for the establishment of facilities on the Korean side of the river for generating 640,000 kilowatts as the maximum and 360,000 kilowatts under ordinary circumstances. A part of the facilities, capable of turning out 270,000 kilowatts, was to have been completed in 1940. The production will be halved for consumption by the inhabitants of South Manchuria and the North Korean people.

Pilteng Lake Plant

The Pilteng Lake plant aims at producing a maximum of 30,000 kilowatts and an average of 15,000 kilowatts of power for consumption in Mutankiang and Chientao Provinces. The construction work for this plant was commenced in May 1939.

Hunkiang Plant

The Hunkiang plant is set to produce the necessary hydro-electric power for the development of the rich mineral deposits of Tungpientao and its surrounding districts and it has been decided to construct immediately a power plant on the Huanyen River to supply 200,000 KW. of electric power for the exploitation of these units.

Other Projects. In addition to the afore-mentioned plants, a project has been under way to construct power plants on the Lan and Pai rivers in North China, principally in the region of Chitung district. It is anticipated that approximately 500,000 K.W. of electric power can be generated there, and at present the district is being closely surveyed.

The planned development of hydro-electricity in Manchoukuo is a tremendous undertaking and with the exception of the Yalu River plant which is a joint enterprise of Manchoukuo and Chosen, all the remaining plants will be developed through a regulated and all-embracing plan under the direct management of the Government of Manchoukuo. It is believed that when the power plants are completed electric power will be supplied at a moderate cost and as a result this will supply the necessary impetus towards the brisk development of industries.

GAS INDUSTRY

The gas industry was initiated in Manchuria, by the South Manchuria Railway Company in 1910 when the Company started supplying gas to the public by establishing a furnace with a daily capacity of 300,000 cubic feet and also a gas tank of a 150,000 cubic feet capacity. In 1925 the Company set up branch plants at Mukden, Anshan and Hsinking. Simultaneously with this the gas works of the Company was reorganized into the South Manchuria Gas Company, capitalized at ¥10,000,000, fully paid-up.

The Fushun Colliery has its own gas producing plant, and also is supplying the public. Gas production in 1938 amounted to 29,445,000 cubic meters.

Table 7. STATISTICS OF GAS INDUSTRY

Year Ending Mar. 31:	No. of		Daily Capacity (cubic m.)	Production (1,000 cubic meters)	Tank		Extension Length of Pipe (kilometers)		
	Cos.	Factories			No.	Capacity	Main -pipe	Conducting pipe	Indoor pipe
1933	2	6	86,158	—	10	71,386	525	467	537
1934	2	6	86,200	23,445	10	81,200	567	521	756
1935	2	6	105,200	29,504	11	86,383	627	622	640
1936	2	6	114,900	32,982	11	86,872	704	689	682
1937	2	6	130,200	37,589	12	85,700	711	787	745
1938	2	6	124,600	29,445	12	86,700	—	—	—

Year	No. of Customers	No. of Nozzles	Total Supply (1,000 cubic m.)	Raw materials Consumed		By-Products		
				Coal (m. tons)	Coke (m. tons)	Coke (m. tons)	Tar (Kilo- litres)	Ammonia (m. tons)
1933	42,809	113,575	15,274	—	—	19,599	1,897	145
1934	46,622	122,631	18,924	41,377	20,291	33,658	2,854	113
1935	55,297	142,945	22,925	59,756	7,648	38,271	2,900	124
1936	63,494	163,897	26,755	71,351	9,227	46,270	3,346	135
1937	71,146	181,835	29,946	76,830	9,648	49,509	3,263	169
1938	67,135	201,208	27,930	64,700	—	41,743	2,056	—