MANCHURIA: AN INDUSTRIAL SURVEY

ANDREW J. GRAJDANZEV

IN THE NEXT FEW YEARS Manchuria is destined to play an important role in the Far East. But first of all let us clarify what is meant by Manchuria. Before 1931 it comprised China's so-called Three Eastern Provinces [Tung San Sheng] — Heilungkiang, Kirin and Mukden. The Manchuria of this article is "Manchoukuo," the area and population of which is larger than the area and population of Manchuria in the frontiers of 1931, because it includes also the former Jehol province,[1] a section of Chahar, and parts of Hopei north of the Chinese Wall.

For its size and population, Manchuria in these frontiers may be compared with the following European countries and some of the states of the United States:

	Area in thousand sq. miles	*Population in millions*	*Year*
Manchuria (including Kwantung)	503.9	44.8	1943
Germany, France, Italy	513.5	154	1938
North Dakota, South Dakota, Montana, Wyoming, Iowa and Nebraska	522.7	6.0	1940

The area of Manchuria is equal to the area of Germany (with the frontiers of 1933), France and Italy combined, or to the combined area of the six above-named American states, the relief and climatic conditions of which are similar to those of Manchuria. On the basis of area alone Manchuria is thus a huge region. But even in respect to population it is an area of great significance, — the world has but eight countries with a larger population. With regard to the nationality of the population Manchuria has preserved its Chinese character in spite of the

1 The frontiers of Manchoukuo's Jehol do not coincide with the frontiers of the former Jehol province; on the one hand, parts of the former Jehol province went to Chinchow and Western Hsingan; on the other, the new Jehol includes parts of Chahar and Hopei.

All recent statistics are for "Manchoukuo," which must therefore be taken as the basis for analysis. Postwar Manchuria will evidently revert to the Three Eastern Provinces only, but these provinces contain the bulk of Manchuria's industrial plant and natural resources.

fourteen years of Japanese occupation. In the first years of their occupation the Japanese worked out a twenty-year plan, the purpose of which was to bring the number of Japanese in the country to about twenty per cent of the total population, a proportion which, they believed, would be sufficient to ensure permanent Japanese domination. Whatever the original intentions had been, the events that followed compelled the Japanese to give up this idea in fact, if not in plans and aims. The exigencies of the war necessitated a larger and larger industrial production in Manchuria and this, in turn, created need for more and more labor. This labor could be found and was found only in the Chinese provinces of Hopei and Shantung, eventually through compulsory recruitment. The working population of Japan Proper was taken in part by the armed forces and in part by the Japanese munition factories, and in Japan itself there developed an acute shortage of labor. Under these conditions the Japanese unemployed and the impoverished farmers have shown no great enthusiasm to emigrate to Manchuria, a country whose climatic and cultural conditions are so different from those prevailing in Japan, where the language of the people is a foreign language to a Japanese, and where the local farmers look upon the new-comers from Japan as enemies.

Not only have the Japanese shown little enthusiasm for Manchuria, but even the Koreans, whose mass emigration to Manchuria was planned by Japanese authorities as a means of strengthening Japanese control, have preferred to move to Japan, instead of to Manchuria, because the wages in Japan were higher, the treatment of the Koreans better than in colonial "Manchoukuo," and the advantages for the Korean children greater.

But the Chinese from China, stimulated by direct and forcible Japanese administrative measures, moved into Manchuria in larger numbers than ever. In 1942, for example, the immigrants from China numbered 1,040,000, and about the same number came in 1943. Not all of them settled in Manchuria permanently; yet this stream of Chinese workers made Manchuria even more Chinese in character than ever before.

About sixty-five per cent of Manchuria's population are farmers working under conditions typical of China's agrarian population — small farms, a large labor supply which, except at the peak of summer activities, exceeds the demand for labor on the farms, wide-spread tenancy, high indebtedness. All this means that besides the seven to eight million adults in the cities who can be employed in industry, commerce,

and transport, many additional millions may be transferred from agriculture without great detriment (or without any detriment) to the agricultural production of Manchuria.

In addition to these three sources of labor — urban population, rural surplus population, emigration from China — we should not forget a fourth. Manchuria is a country of children. There are no figures for the annual natural growth of the population, yet it should be now above the half million mark. From these four sources Manchurian industry, transportation, and mining may easily obtain a minimum of one million workers and even as many as two million workers a year. In other words, the lack of unskilled labor cannot serve as a limiting factor on Manchuria's industrialization.

The weak spot in the industrialization of Manchuria is the paucity of native skilled workers, technicians, engineers. Even before the Mukden incident the number of students in the primary schools of Manchuria was less than one million; in 1944 it was two million. If all children in Manchuria were covered by the educational system, the number of students in primary schools would exceed six million. Thus, the school system covers barely one-third of all children. The situation in respect to high school and college education is even worse. The number of Chinese students in colleges of all types is only about two thousand, and the number of graduates of engineering and mining colleges annually is certainly below two hundred. For the Japanese the schools in Manchuria, aside from the minimum primary education needed for industrial workers, were an instrument implanting obedience and loyalty to their regime and limiting the training of Chinese technicians.

Though the absence of skilled and trained personnel certainly will handicap Manchuria's industrialization, it will not present an unsurmountable obstacle. The number of semi-skilled Chinese workers in Manchurian industry is already considerable. On the higher levels, during the first years after liberation, the use of foreign specialists (American, Japanese and Russian) may help greatly.[2] At the same time the Manchurian authorities should overhaul and expand as rapidly as possible the whole system of education, looking toward the development of technical personnel.

HOWEVER GREAT the agricultural resources and the population of a country may be, and however industrious its workers may be, if

2 Chinese specialists from China Proper will be scarce in China itself in view of the ambitious programs of reconstruction and industrialization advanced by the Chungking Government.

the country lacks such natural resources as coal, iron ore, non-ferrous ores, oil, it may experience unsurmountable difficulties on its way towards industrialization. In this respect Manchuria is much better off than many European countries. Prior to 1931 no careful geological survey, covering the whole country, had been made. The needs of the rearmament program in preparation for aggression spurred the Japanese in their research for new deposits and this search was crowned with considerable success. Moreover, other important discoveries are ahead, discoveries which may further raise the industrial potentialities of Manchuria. In September, 1944, Taketora Ogata, President of the Japanese Information Board, estimated the coal reserves of Manchuria at 27 billion tons, while before the Mukden incident the highest estimate placed them at about three billion tons. Most of this coal is bituminous and is very conveniently located either near the sea (the Fushun and Fuhsin coal fields, for example, are less than one hundred miles from the seacoast), near deposits of iron ore (like Penhsihu and Tungpientao coal fields on the southeastern fringe of the region) or near the great navigable rivers (like the Hokan coal fields, not far from the mouth of the Sungari and a few miles from the river itself and like the Mishan coal field near the Ussuri, and also fields in Aihunhsien and at Wutaokou near the Amur). The Hokeng and Mishan coal fields are especially important not only because of the size of their reserves, but also because they contain good coking coal of which Manchuria was considered especially deficient. An estimate of 27 billion tons of coal reserve does not place Manchuria in the forefront with such industrial nations as the United States, Great Britain, Russia; but it places the region well ahead of France, Belgium, Holland, Sweden, and other industrialized nations.

Most of the Manchurian coal is near the surface. The Fushun and Fuhsin coal mines permit open pit operations and in several other fields the coal can be mined in the same way, with very low production expenses. It is true, the final cost of coal in Manchuria — relative to the prevailing price level — was not low, but this was due to the absence of mechanization: the work proceeded under extremely primitive conditions. How far this may have been remedied in the last seven years we do not know; but the rapid rise of output that has taken place was probably due not only to the increase in the number of miners, but also to improvements in equipment. Judging by the percentages of growth, as revealed by the Japanese authorities, the production of coal

in Manchuria in 1944 amounted to 45-55 million tons. If this is true, Manchuria now occupies the sixth place among the coal producing nations of the world. It is possible that the Japanese claims are exaggerated and that actual production amounts to only one half of the figure given above; but even 25 million tons (representing doubling of production in eight years) would be six times as large as the coal production of all the South American republics.

Recent Japanese dispatches claim that besides coal Manchuria has great reserves of natural oil, estimated at three billion tons. The first announcement of oil discovery in Manchuria was made in 1940; in that year oil was found in the region of the Fuhsin coal field, Chinchow province, about sixty miles from the seacoast. The first reports spoke only of small quantities of oil obtained; and judging by the acute shortage of oil products now prevailing in Manchuria, it is doubtful that production advanced very far; though this may be due not to the over-optimism of the reports on the discoveries, but to the absence of drilling equipment and to various wartime difficulties. Even if the Japanese estimates are exaggerated, the discovery of oil in Manchuria makes the prospects of Manchuria's industrialization all the brighter.

There is no question as to the significance of Manchuria's oil shale reserves, from which gasoline, kerosene, fuel oil, paraffin, lubricants, and ammonium sulphate can be and are obtained. Total reserves of oil shale are estimated at more than seven billion tons with the average content of oil from five to six per cent of the weight of oil shale. The largest reserve of oil shale is conveniently located at Fushun, where the shale seams overlay the coal seams; but substantial reserves have been discovered also at Lotzekow, Fengning, and other places. These reserves may serve as a basis for a well-developed chemical industry.

OF EVEN GREATER IMPORTANCE as a source of energy in Manchuria, the potential water power should be considered. In 1940 the Japanese estimated that fifty water-power plants, constructed at the most promising sites, would have a maximum capacity of six million kw and an average generation capacity of 3,250,000 kw (the difference being due to the difference in the levels of water at the time of summer rains and at the time of winter drought). The most important stations planned are as follows:

	Average generation	*Maximum capacity*
	1,000 kw	*1,000 kw*
Sungari River No. 2	850,000	1,780,000
Yalu River (incl. Hunkiang) [3]	1,133,000	1,913,000
Mutankiang system	383,000	686,000
Luan River	393,000	772,000
Nonni River	209,000	335,000

The water-power potentialities of Manchuria are, in fact, considerably larger than the figure of the three million kw given above. If the relations between the government of China and the local government in Manchuria on the one side and the government of Russia on the other side will be friendly, as we hope they will be, it will be possible to utilize tremendous water-power reserves of the Argun, Amur, Ussuri, and Tumen frontier rivers, which certainly would exceed several times the potentialities of the fifty sites investigated by the Japanese. During the Japanese occupation, in view of the strained relations and almost constant warfare on the border there could be no question of such utilization. Moreover, from the enumeration of the sites it is clear that the Manchoukuo authorities avoided the planning of power stations too near the border. All this means that the potential water-power resources of Manchuria are not 3,250,000 kw but several times as large.

Not all the water-power stations mentioned above have remained in the planning stage. The Yalu stations, the Second Sungari Station (the Fengman Power Station), the Tsing-Po Lake Station, the Huanjen Station on the Hun River, the Yung-feng and Hishu Power Stations and a number of others are already in operation, though it is quite possible that their water power is not being used to full capacity because much equipment had been ordered from Germany which after the outbreak of war could not reach Manchuria, while Japanese industry experienced some difficulties in supplying these stations with huge generators. The capacity of the water power stations and of the stations using coal by 1945 has probably reached three million kw, in which case the total annual generation of electric power in Manchuria should have reached twelve billion kwh, and we should remember that in 1928 the generation of electricity in France amounted to thirteen billion kwh.

[3] The Yalu being a frontier between Manchuria and Korea, only half of the power of its stations can be used by Manchuria, the other will go to Korea.

Reserves of coal, of oil shale, of oil, and of water power show that Manchuria certainly has a sufficient basis for a well-developed industry, as large as, say, French industry, if not larger.

AMONG METAL ORES the first place should be assigned to iron ore. Recent Japanese estimates fix the iron ore reserves of Manchuria at three billion tons. This would place Manchuria among the countries richest in ore. Here, however, caution is advisable. We are not informed as to the average iron content of this ore. Before 1940 the known deposits of iron ore in Manchuria were chiefly lean ores with the content of iron about 33-35 per cent and only a few sites had ores of 50-68 per cent iron content. In many countries ores with such low iron content are not included in the estimates of iron ore reserves. On the other hand, the Japanese claimed that the discovery of ores in the Eastern Frontier region changed the whole picture of the iron ore reserves in Manchuria, and the wartime exploitation of the Tungpientao fields tends to justify this claim.

Even with poorer reserves, by special treatment of lean ores a substantial production of pig iron and, ultimately, of steel can be achieved. The figures of the present output are not available, yet judging by the figures of percentage growth, as given by the Japanese authorities, the production of pig iron in Manchuria should have reached in 1944 two and a half and maybe even three million tons. This is not much, yet before the war only six or seven countries of the world had a larger production, and such countries as Canada, Italy, India, Sweden, each produced less than 2½ million tons of pig iron a year. Even more significant, steel production is reported to have exceeded one million tons during the war.

To this should be added "practically inexhaustible" reserves of aluminum ores; one of the largest reserves in the world of magnesium ores and ores of other light metals; large reserves of molybdenum; reserves of copper, lead, zinc, gold, graphite, and of many other minerals and metallic ores. What is especially important, these reserves are not just travelers' tales: they are already in the stage of exploitation. We do not possess the figures of actual production, it is true, but the size of the paid-up capital of Manchurian mining corporations and the repeated increases of their capital show that the exploitation of these reserves has passed long ago the exploratory stage.

Here we should mention also the important timber resources of Manchuria. The area under standing timber in Manchuria is estimated

at 54 million acres as compared with 462 million acres in the United States. The Japanese estimate the volume of standing timber at 3.8 billion cubic meters (or 1,610 billion board feet), which appears too large. Thirty-one percent of this volume is represented by softwoods and 69 per cent by hardwoods (the ratio in the United States is about 15 per cent of hardwoods and 85 per cent of softwoods *in volume*).

In addition to 54 million acres of standing timber there are 163 million acres of forest area without standing trees. A large part of this area is unsuitable for agriculture and should be reverted to forest. Manchuria faces an extremely grave problem of re-forestation, and the acuteness of this problem has been intensified by the Japanese policy of reckless felling during the war.

Finally, it should be mentioned that Manchuria has about 600 miles of seacoast along which intensive fishing takes place, the total catch fluctuating between 40 and 50 thousand tons a year. The seacoast also serves as a place of salt production, the total in Manchuria, including Kwantung, reaching 900,000 tons a year; during the war years the production of salt has increased.

This short enumeration of Manchuria's natural resources shows that the region, as compared with Germany, France, and Italy, is poorer than these three countries taken together and hardly has resources that would make it a second Germany or a second Great Britain; yet its resources are not insignificant. They are immeasurably larger and more diversified than those of Italy or even of France. One should remember that there are in the world only a few countries which have such a favorable combination of large reserves of coal in proximity to iron ore, as is seen in Germany, Great Britain, the United States, and Russia. Outside of these four countries there are few regions better supplied with natural resources than Manchuria. But, — and this is especially important — with the exception of coal, Manchuria is much better supplied with natural resources than is China Proper.

IT IS NOT ENOUGH to have natural resources; it is necessary to have the means of communication to bring them to the manufacturing centers or, if the manufacturing takes place in the localities where the resources are found, to bring them to the places of consumption. Many countries have faced a difficult problem: should they first start industrialization and then build a system of communication, or should they build a system of communication, and then wait for industrialization to follow?

This problem does not exist for Manchuria: the region has already

a relatively well-developed system of communications. This does not mean that the system is complete or that it does not need improvements and expansion. The railway system of Manchuria, for example, has been built primarily not for economic consideration but for strategic purposes. For industrialization purposes, however, the existing communication system of Manchuria is sufficient as a starting point.

Before the Mukden incident the length of the railways in Manchuria was 5,570 kilometers or 3,460 miles; in September, 1943 the total length reached 15,000 kilometers, or 9,300 miles, i.e., a higher figure than for the whole of China Proper. The amount of goods carried by railway in 1939 exceeded 40 millions tons. It is quite probable that as a result of the war there will be a shortage of rolling stock on Manchurian railways, but this would not be due to war activities in Manchuria itself. During the war Manchuria has served as the base for Japanese activities on the continent. The Chinese scorched-earth policy and the actual fighting in China Proper resulted in an acute shortage of rolling stock on the Chinese railways. To mitigate it, many locomotives, coaches, and freight cars were sent from the South Manchurian Railway south of the Chinese Wall; and a considerable number of the personnel of the South Manchurian Railway were transferred to Peking, Nanking, and other Chinese cities. Also, the double-tracking of the Korean trunk-line probably depleted the reserves of rails in Manchuria. It is quite possible that the fighting of the first few days of the Russo-Japanese War of 1945 resulted in serious damage to the western portion of the former Chinese Eastern Railway and to the eastern and northern portions of several other railways; and the bombing by Russian planes of the Harbin, Changchun (Hsinking) and Mukden railway stations caused considerable damage. Yet it is doubtful whether this loss and damage resulted in a serious disruption of the work of the railways after the end of hostilities. Moreover, the well-equipped railway shops of the South Manchurian Railway could no doubt quickly replenish the losses in the rolling stock.

A few words may be said here about the South Manchurian Railway and the Chinese Eastern Railway because these roads will be under joint Chinese and Russian management and control.

The length of the South Manchurian Railway is 701 miles (1,129 kilometers), the main line being double-tracked from Dairen to Changchun. From 200 million yen in 1908 the capital of the railway company has recently been increased to 1,400 million yen, and plans were under way to increase it further in 1945. Not all of this is invested in the

railway, because the company owns ports, hospitals, houses, public utilities, industrial enterprises. The receipts of the company have increased from 12½ million yen in 1907-08 to 230½ million in 1927-28 and to 1,296 million in 1943-44. Part of the increase in capital and receipts is due to the fall in the value of the yen, but most of it represents a genuine increase in investments and operation. That this is so, one can see from the passenger rates: in 1944 the rate per mile for third class passengers was 4.186 sen or, at the pre-1941 rate of exchange (23 cents per yen), less than one cent per mile (.963) which is lower than the rate prevailing in the United States.

The length of the Chinese Eastern Railway is (or, better, was, because in 1935 the Japanese divided this railway into three separate lines) 1,069 miles; the capital invested was reported by the railway administration to amount to 400 million rubles (at the rate of exchange Rb. 1 = U. S. $0.515) which appears excessive. The railway receipts in the best year of 1929 reached 70.1 million rubles.

Though the length of these two railways makes less than 20 per cent of the total length of the Manchurian railways, yet these two carry almost three fourths of the total freight of the region and more than half of its passengers. This is due to the fact that they pass through the most populous and most industrially developed parts of the region.

The Japanese claim that while in 1932 there were in Manchuria only about 2,000 miles of automobile roads, in 1943 their length reached 40,000 miles. Every year from ten to twenty million yen were spent on construction of new roads and repairs of old ones. Intensive bus traffic characterized these roads. In 1938 buses and trucks carried more than 80 million passengers and more than 100 million tons of freight. Practically all cities and towns are connected by bus lines. Many buses were old (especially after four years of war) and overcrowded; yet they served their purpose.

LESS ATTENTION WAS PAID by the government to the development of river traffic, the prospects of which are bright. The rivers of Manchuria belong mainly to four systems: (1) the Amur; (2) the Liao; (3) the Yalu; and (4) the Tumen. The last two rivers being frontier rivers, passing through mountainous terrain, are of small importance for navigation; but the Amur tributaries and the tributaries of the Liao cover nearly all the plains of Manchuria. Only a few miles divide the Liao and Amur tributaries near Changchun and, in view of the character of the terrain, the construction of a canal connecting the north and south is quite feasible and would not be expensive.

At present the total length of the navigable parts of the rivers is about 6,000 miles as compared with 9,300 miles of railways. Of course, these 6,000 miles of waterways are of unequal value: some are good only for junks, but others are navigable by steamers of 1,000 tons or more. With the investment of capital in river improvements, with the erection of dams for water-power stations and with the construction of canals, of which none exist now, the river system of Manchuria may carry more freight than the railways of that country.

In 1939 there were plying on the Manchurian rivers 215 steamers with a tonnage of 76,000 tons; and 900 junks with a tonnage of 34,000 tons.[4] This, of course, is very little. The development of river transport in Manchuria lies ahead.

For inner commerce and industrial purposes the seaports of Manchuria cannot play an important part, because the seacoast of the region is short and, besides Dairen, there are no important industrial centers. Manchurian ports can serve only the purposes of external trade. Among these ports the largest is Dairen; less developed is Newchwang (Yingkow), at the mouth of the Liao. Hulutao is a new port in Chinchow province which may serve as an outlet for the Jehol and Chinchow provinces. Before the Mukden incident the Japanese considered it as a rival to Dairen (the distance from Mukden to Hulutao is shorter than from Mukden to Dairen); but the industrial development of the region showed that it needs more than just one port. In 1944 the Japanese started the construction of a new port at the mouth of the Yalu River — Paotungchan. They also used the Korean ports of Yuli, Rashin, and Seishin. Now, with the restoration of the Russian position in Manchuria, Vladivostok will be reopened for Manchuria trade. Thus there will be no shortage of sea outlets.

IT IS IMPORTANT to note that, with few exceptions, the available statistical data on the industrial development of Manchuria do not go beyond the year 1937 or, at the latest, 1939, after which date a veil of secrecy was thrown over the Manchurian economy. But the most important development of industry in Manchuria has taken place since 1937. This makes difficult a correct estimate of what has been done in Manchuria during the last eight years.

Before we proceed to examine the state of particular industries, let us make an effort to estimate the size and significance of the changes in

[4] This does not include vessels registered in the Kwantung Leased Territory and vessels of less than 20 tons.

the economy taken as a whole. At the time of the Mukden Incident Japanese investments in Manchuria were estimated at 1,750 million yen (exclusive of the investments in the Kwantung Leased Territory, estimated at that time at 400 million yen); by 1943 these investments reached 7,140 million yen. Japanese investments in Manchuria increased as follows:

	Total amount. million yen
Before Sept. 18, 1931	1,750
1932-1939, 8 years	3,050
1940-1943, 4 years	2,340
Total	7,140

This total does not include Japanese investments in the Kwantung Leased Territory, the investments of the Chinese themselves and the investments of the Manchurian Government; the latter were of growing importance, amounting to billions of yen.

The figures of the Japanese investments, given above, include not only investments in industry, in which we are primarily interested now, but in all spheres of economic activity. More indicative of industrial growth would be the growth of the paid-up capital of the Manchuria Industrial Development Corporation.[5] As is well known, the Japanese militarists were trying to establish a "planned economy" in Manchuria. In practice it meant a monopoly of investment and enterprise for the Japanese magnates. The Manchuria Industrial Development Corporation was organized in December, 1937, as a kind of holding company investing into, and supervising the management of, the monopolistic industrial corporations engaged in actual production in Manchuria, especially of those in heavy industry. Its paid-up capital in the first half of 1938 was 292 million yen; in January, 1944, the total investments of the Manchuria Industrial Development Corporation and its subsidiaries amounted to 2,900 million yen. Taking into consideration investments made during 1944 and the first half of 1945 and the investments in industry by private firms and corporations not connected with the Manchuria Industrial Development Corporation, it would not be an exaggeration to say that by July, 1945, the investments in Manchurian industry reached at least four billion yen, and might have been as high as five billion yen.

5 The field of its activities covered initially iron and steel industry, coal mines, light metal industry, automobile and aeroplane manufacturing industries. Later it was expanded.

It is true, the yen of July, 1945, had a smaller purchasing power than the yen of 1937; but through various devices its purchasing power was kept at a relatively high level: there was no "run-away" inflation. To envisage the meaning of the four billion yen invested in Manchuria the following example may be helpful: *all* British private investments in India in 1936 were estimated at 240 million pounds or, at the rate of exchange prevailing in that year, ₹4,414 million. This includes not only industry, but also plantations, railways, public utilities, etc., while the estimate for Manchuria relates only to industry.

As was mentioned, the industrialization of Manchuria under the Japanese was not a matter for private initiative as we usually understand it. In each field only one huge corporation was permitted, which either completely absorbed the existing firms, or became a selling organization for the firms that lost their former independence; in only a few fields were the existing enterprises left to themselves, though even in these fields many of their activities were strictly regulated. The profit motive was preserved, though subordinated to the needs of the general plan. The Planning Bureau of the Hsinking General Affairs Board prepared the plans for the national economy as a whole; and "special" companies were to operate in accordance with them. The regulation of prices, the system of priorities on materials, the distribution of labor — these and other levers compelled, if not induced, the employers to follow the plans prepared by the Planning Bureau. Probably, there were many evasions, outright cheating of the authorities, open or hidden resistance in some cases; but on the whole industrialization was proceeding, and at a relatively rapid pace.

As to the profit motive, the government guaranteed, for example, to the shareholders of the Japan Industrial Company (later reorganized into the Manchuria Industrial Development Corporation) a net return of six per cent per annum, while placing no upper limit on dividends and stipulating only the participation of the state in excess profits, if any.

BEFORE 1931 Manchuria, like all agricultural countries, possessed some industry processing agricultural products, such as flour mills, soya bean oil mills, alcohol factories, and so on; but the region had no heavy industry worthy of the name. It produced no machinery, no electrical equipment, no steel, no light metals; production of pig iron in 1929 was less than 250,000 tons; coal mined (about 10 million tons) was used by railways or exported abroad.

Much has changed since 1929. Manchurian industry now produces two to three million tons of pig iron and over one million tons of steel. It produces aluminum, magnesium, copper, chrome, molybdenum, special steels. It mines at least 25 million tons of coal (maybe twice this amount). It manufactures locomotives, automobiles and airplanes. The chemical industry produces coke, synthetic oil, sulphate of ammonia, dyestuffs and paints, creosote and sulphuric acid, benzol, and munitions, paper and rayon. The changes are certainly great and far-reaching. In 1944 steel was produced by 17 steel companies, coal was mined in 42 coal mines, light metals in 22, and, in addition, 52 mines were mining lead, tungsten, manganese, asbestos, chrome, mercury, and other metals and minerals.

Among the corporations specializing in heavy industry the largest was the Manchurian Iron Manufacturing Company, an amalgamation (in 1944) of the Showa Steel Works, the Penhsihu Coal and Iron Company and of the Tohendo (Eastern Frontier) Development Company. Its paid-up capital reached 640 million yen.

The Manchurian Electric Industry Corporation, formed by the amalgamation of the Hydroelectric Power Construction Bureau and the Manchurian Electric Company in 1944, had a capital of 600 million yen. The capital of the Manchuria Light Metal Corporation was increased in 1943 from 80 million yen to 200 million yen. We quote these figures because they indicate the size of the development.

Let us now survey some branches of industry, remembering that the information available is either out of date or incomplete.

By 1939 the cotton spinning and weaving industry of Manchuria had about 500,000 spindles and 10,000 looms and could satisfy about one-third of the local demand. It is doubtful whether new investments were made in this industry after 1940: this is a consumers' goods industry, and the planning authorities paid little attention to the needs of the local population. Yet it is quite probable that some spindles and looms were brought from Japan where 70 to 80 per cent of the textile factories had been closed down. Among the new developments in Manchuria which should be noted is the production of rayon and staple fibers, though figures characterizing this production since 1939 are not available.

The bean oil industry had a capacity for producing annually as much as 130 to 150 thousand tons of bean oil (plus about one million tons of bean cakes); no doubt, its capacity has not been increased in the last seven years because the cultivation of soya beans was not expanded.

Manchurian flour mills, with a total capacity of 600 to 700 thousand tons of wheat a year, were covering about 90 per cent of the domestic demand. Again, their capacity has hardly been increased during the war.

In 1936 the production of sulphate of ammonia reached 180,000 tons; this was to be increased to about 350,000 tons in 1939. In view of the need for sulphate of ammonia for the manufacture of explosives and the great expansion of electricity production, we may safely assume that by 1945 the productive capacity of such plants was several times as large as it had been in 1939. This expansion will be of great significance for Manchurian agriculture. It was also planned to produce annually 200,000 tons of carbide and, by 1942, 1,700,000 tons of oil from coal and 650,000 tons of oil from oil shale, 150,000 tons of alcohol, 400,000 tons of pulp. The capacity of the cement works in 1939 was estimated at more than two million tons, and it has been expanded since then. There is no doubt that production of explosives also has been greatly expanded, though no data are available.

In September, 1931 the Japanese seized the Mukden Arsenal, the cost of construction of which was estimated by the Japanese at 200 million yen, though this figure appears exaggerated. This arsenal became a basis for the development of the machine industry of Manchuria, its equipment being utilized in the establishment of several new corporations. The Dowa Automobile Company, established in 1933, was originally nothing but an assembly plant; in 1939 it was transformed into the Manchuria Automobile Company, capitalized at 100 million yen, with plants at Antung and Mukden; its management planned to employ later as many as 100,000 workers. In 1938 the Manchuria Aircraft Manufacturing Company was organized with a capital of 20 million yen, the seat of its factories being near Mukden. We know also that a substantial production of general and electric machinery was going on in Manchuria in 1944 and 1945; and the Dairen dockyards began to build ships up to 5,000 tons.[6]

The purpose of this enumeration is not to give a well-rounded picture of the present state of Manchuria industry: for such a picture the available information is not sufficient. Our purpose is just to illustrate

[6] Regarding losses sustained by industry from military operations, there were only a few bombings by American planes, chiefly in Anshan and Penhsihu and the damage must have been repaired. The fighting with Russia was short and took place in localities without important industries. On the other hand, scores of factories were moved from Japan to Manchuria between July, 1944 and August, 1945.

with some examples that the industrial development of Manchuria is really of great importance; it is not something that has remained just in the planning stage.

A person acquainted with the state of industry in the United States may be inclined to minimize these achievements. Compared with the production in the United States of 80 to 90 million tons of steel and 240 billion kwh of electricity, Manchuria's production of, say, two and one-half million tons of pig iron and 12 billion kwh of electricity may appear extremely small. Yet India with her 400 millions of population produced in 1944 less than four billion kwh of electricity and certainly less pig iron than Manchuria.

It would be rash to say that Manchuria is now an industrialized country. The majority of her population is still occupied in agriculture; her industrialization has a one-sided character because it served the war needs of the Japanese Empire. The driving force of this industrialization was the Japanese Government; managers of the new plants and factories were Japanese; the overwhelming part of the engineers and technicians were Japanese; an important part of the skilled workers were Japanese. Furthermore, the industrialization was conducted under the pressure of war needs, with an utter disregard for the health, rest, and contentment of the local population. The construction was done chiefly by muscular energy of millions of Chinese coolies. The country was stripped bare of all necessities for the sake of the speedy construction of a military base which had to supplement the Japanese industries in Japan, and, if need be, even to supplant them.

Under all these conditions it is natural to ask certain questions concerning the future of this industrialization. Will it survive the downfall of the Japanese Empire? With Japanese power gone, with the war over, will not all these projects be left to crumble, only to remind a casual traveler of the ambitious, nay, grandiose plans of the would-be world conquerors? Will not Manchuria revert to its former status — an agricultural region, selling beans and buying cotton fabrics?

The primary question which should be answered in this connection is: Does the Manchuria of 1945 possess enough material resources to embark on an ambitious program of industrialization? Before the start of the Pacific War the industrialization of Manchuria was rapidly progressing because of the fact that Japanese investments were poured into Manchuria on a larger and larger scale. These investments were rising in the following way:

Year	*New Japanese investments in Manchuria, million yen*
1932	97
1933	151
1934	272
1935	379
1936	263
1937	348
1938	439
1939	1,104

These are official figures. They do not explain to us whether these hundreds of million yen came from Japan or were raised in Manchuria itself. But the figures of Manchuria's external trade supply us with the explanation. The balance of Manchuria's external trade was changing in the following way (in million yen):

Year	*Favorable balance with all countries*	*Unfavorable balance with all countries*	*Excess of imports from, over exports to, the Japanese Empire*
1929	156.8	—	—
1930	145.7	—	—
1931	397.7	—	—
1932	280.5	—	—
1933	—	67.3	136.5
1934	—	91.2	89.9
1935	—	183.0	239.4
1936	—	89.1	253.7
1937	—	242.1	344.7
1938	—	549.2	516.6
1939	—	981.4	1,019.5

This table shows that most of the Japanese investments in Manchuria made before 1940 came from Japan. Beginning with 1933 Manchuria's balance of trade became "unfavorable"; and the size of this "unfavorable" balance almost equalled the size of Manchuria's "unfavorable" balance of trade with the Japanese Empire. This shows that during 1931-1940 Manchuria's industrialization was proceeding chiefly, though not exclusively, at the expense of Japan.

This situation, however, was changed in the course of the Pacific War. Hard-pressed by the Allies, being in dire need of funds at home, Japan tried to find in Manchuria itself larger and larger funds for further industrialization and for the expenses of war. On the other hand, the productive forces of Manchuria, as a result of these investments, grew. Thus, Japan was able to pump more and more funds *from* Manchuria. "Savings" of the Manchurian population, used for new investments and

for war, reached two billion yen in 1943-44; savings for 1944-45 rose to 3.7 billion yen and those for 1945-46 were fixed at six billion yen. There is no doubt that these savings, used for financing the war and for industrialization, represented a very heavy burden on the Manchurian population. Japanese authorities estimated the national income of Manchuria for 1945-46 at 13 billion yen. Thus, in 1945-46 the Japanese intended to divert 46 per cent of Manchuria's income for the purposes of industrialization. These figures indicate how great were the sufferings and privations imposed upon the population by this policy.

But there is no need in time of peace to exact anything like the huge sum of six billion yen from the population. If Manchuria would invest annually, say, one billion yen in the national economy, and spend 500 million yen on social services, these two items would amount to less than twelve per cent of its national income. We should not forget that an abandonment of the program of industrialization would result not in an improvement in the lot of the masses, but in its deterioration. If the prices prevailing in 1945 and the size of the crops expected in that year were the same as those of 1940, the income from agriculture would reach about three and one-half billion yen. As to the size of the crops, the assumption is probably not far from the reality; but we are less sure of prices. Let us assume that the agricultural prices used by the Japanese economists in estimating Manchuria's national income were 50 per cent higher than those prevailing in 1940, then the income expected from agriculture would be 5¼ billion yen. From where were the remaining eight billion to come? No doubt, they were to come chiefly from mining and industry. But mining and industry in Manchuria produced few products for civilian consumption. Their products were mainly either munitions and implements of war, or producers' goods. Some of the plants, of course, can be easily converted to the production of consumers' goods, but the number of such would be small. To stop the process of industrialization would then mean to stop this industrial production and therefore to reduce the size of the national income. In other words, the means of financing the program of further industrialization are here available, but for the time being they can be used chiefly for the continuation of the program. There is nothing paradoxical in this situation: the industrial facilities created by the Japanese in Manchuria during 1931-1945 were not intended for the satisfaction of the civilian demand in Manchuria. One cannot "reconvert" these facilities to civilian production because they have never been converted:

they were created for the purposes of war. True, with further expansion of industry greater and greater masses of consumers' goods would be forthcoming; but in order to achieve this, industry should continue to expand.

Thus we believe that the physical facilities for further industrialization in Manchuria are available; and the work can be resumed, where the Japanese have left it. Only this time the purposes of the new construction must be different. Of course, all this does not mean that the Manchuria of 1945 can produce itself all the needed equipment and machinery; many things would be imported from abroad. But, as was mentioned, in that respect Manchuria is favorably situated. Its soya beans, kaoliang, millet will be welcomed by neighboring countries; its soya bean oil and cakes will be in great demand in Europe; its coal production may help greatly to overcome the world coal shortage of the next few years; and its gold will be sufficient to cover a substantial portion of its imports. Thus, even without financial assistance from Japan or from any other country, Manchuria can continue its program of industrialization. In that respect it is in a position different from that of China Proper or Lndia. Chungking's plan of industrialization rests on a hope of getting large loans from the United States. The success of the Bombay Plan in India depends to a large extent on the possibility of obtaining foreign loans and on India's ability to get pound per pound on her sterling credits to Great Britain. Further industrialization of Manchuria does not depend upon outside sources of financing: it can stand on its own feet (though foreign borrowing would accelerate industrialization and thus should be welcome). The collapse of the Japanese rule in Manchuria was sudden; industry, communications, agriculture may be short of liquid capital, but otherwise are in good shape; the country has suffered little from destruction; the enemy had surrendered or left the country before the main crop of the region was taken from the fields. Manchuria is neither Italy, nor Poland, nor China Proper.

New York, August 1945