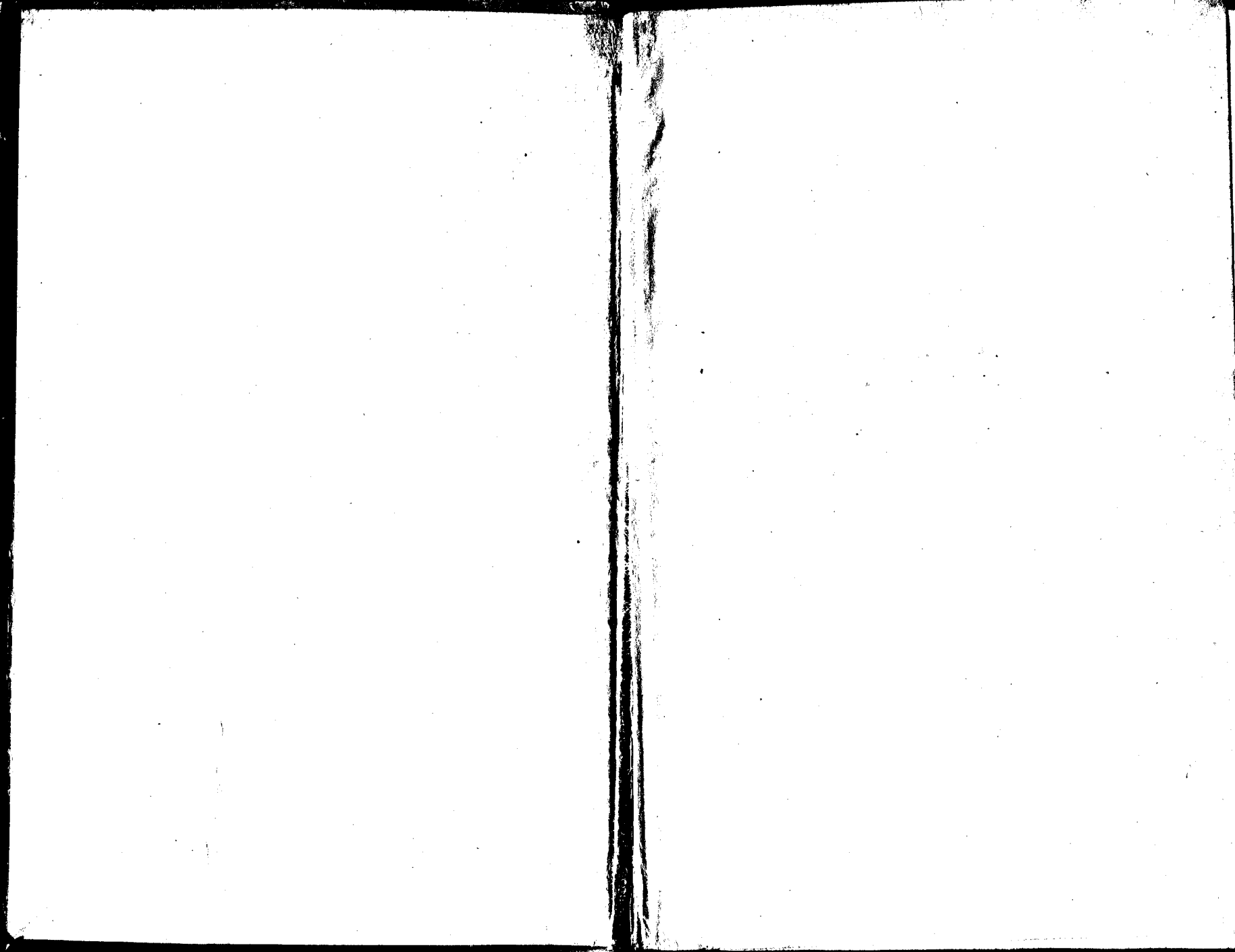


USSR

speaks for itself

INDUSTRY

LW TWO SHILLINGS & SIXPENCE



U. S. S. R.
SPEAKS FOR ITSELF

VOLUME ONE

INDUSTRY

LAWRENCE & WISHART LTD
2 Southampton Place, W.C.1

First Published August 1941

Printed in Great Britain by Crafton Press Ltd. (T.U.),
30-32 Brunswick Street, Leicester

C O N T E N T S

- 1 THE U.S.S.R. AS A WORLD ECONOMIC POWER
*By E. VARGA, Director of the Institute of World Economics
and Politics of the Academy of Sciences of the U.S.S.R.*
- 2 ECONOMIC PLANNING
By PROFESSOR J. JOFFE.
- 3 MINERAL RESOURCES OF THE U.S.S.R.
*By I. M. GUBKIN, Member of the Supreme Soviet of the
U.S.S.R. Vice-President of the Academy of Sciences of the
U.S.S.R.*
- 4 THE INDUSTRIAL MIGHT OF THE U.S.S.R.
*By I. BARDIN, Member of the Academy of Sciences of the
U.S.S.R.*
- 5 LIGHT INDUSTRIES OF THE U.S.S.R.
*By D. KHAZAN, Order of Lenin. Asst. People's Commissar
of the Textile Industry of the U.S.S.R.*
- 6 INDUSTRIAL PROGRESS IN THE SOVIET REPUBLICS
OF THE NON-RUSSIAN NATIONALITIES
*By M. PAPYAN, Vice-President of the Presidium of the
Supreme Soviet of the U.S.S.R. Chairman of the Supreme
Soviet of the Armenian Soviet Socialist Republic.*
- 7 WORK AND WAGES IN THE SOVIET UNION
*By I. GUDOV, Order of Lenin. Member of the Supreme
Soviet of the U.S.S.R. Metal Worker.*

8 WHO DIRECTS SOVIET INDUSTRY

By N. SMETANIN, Order of Lenin. Asst. People's Commissar of Light Industry of the U.S.S.R. Member of the Supreme Soviet of the U.S.S.R.

9 MAGNITOGORSK

By A. BAIKOV, Member of the Academy of Sciences of the U.S.S.R. Deputy to the Supreme Soviet of the U.S.S.R.

ILLUSTRATIONS

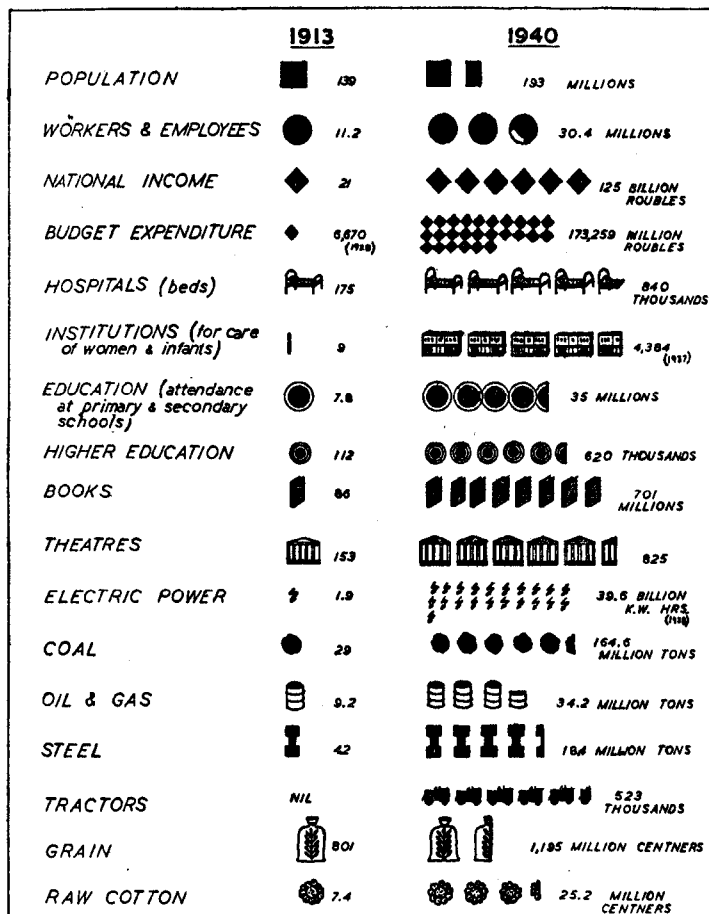
	<i>Facing Page</i>
THE MAKEYEVSKY WORKS	16
ELECTRIC POWER WORKS IN TULOMSK ...	17
LUGANSK	32
KIROVSK	33
I. GUDOV	64
LEARNING TO BE SKILLED ENGINEERS ...	65
MAGNITOGORSK	80
S. SHATALIN	81

This series, U.S.S.R. Speaks for Itself, consists of the following volumes, uniform in appearance and format.

1. INDUSTRY
2. AGRICULTURE AND TRANSPORT
3. DEMOCRACY IN PRACTICE
4. CULTURE AND LEISURE

GROWTH OF THE U.S.S.R.

1913 figures are represented by one unit



The statistics on which the above diagram is based are those referred to in the Publishers' Note and are more recent therefore than the figures used in the various articles. The basic sources for the diagram are U.S.S.R. STATISTICS (Moscow); AMERICAN REVIEW ON THE SOVIET UNION (June 1941) published in New York by the American Russian Institute; the REPORT made by N. VOZNESENSKY to the 18TH ALL UNION CONFERENCE OF THE C.P.S.U. (B), February 1941, and since published as a pamphlet in English.

PUBLISHER'S NOTE.

7

DURING the last twenty years, hundreds of books about the Soviet Union have been published in England. Many of them have shown a sympathetic understanding of this great experiment in civilization, but many also have been marred by hostile prejudice, whether avowed or implicit. Only a very few have been the work of experts, qualified by training and experience both to observe and to report objectively; and to whichever category they may belong, the great majority of books that have appeared have been written by foreigners.

It is therefore the special interest of the present series, *U.S.S.R. Speaks for Itself*, that all the articles have been contributed by Soviet citizens actually engaged in the work which they describe. Moreover in every case the author is a distinguished specialist in his subject, occupying a position of honour and responsibility in Soviet society, sometimes as a member of the Academy of Sciences, sometimes as a member of the Supreme Soviet—and often enough as both. Thus in these four small volumes, *Industry, Agriculture and Transport, Democracy in Practice, Culture and Leisure*, we have a picture of unrivalled authenticity of the material and moral strength of our great ally in the war against Fascism.

The articles were originally prepared as separate brochures in connection with the New York World's Fair, 1939. At the time they were written two Five-Year Plans had been completed and the third had just commenced, but such is the tremendous rapidity of progress in the U.S.S.R. that already by the end of 1940 further huge increases in production had been achieved. In order therefore to give a clear idea of these recent developments we include in this note and on the back cover of the book some pictorial statistics specially prepared by David Sharman, and we add below extracts from the Report¹ made on February 18, 1941, to the Eighteenth All Union Conference of the Com-

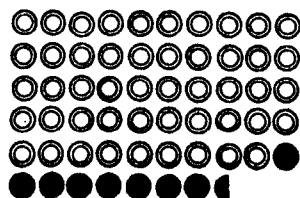
¹ In the other volumes of this series further extracts from the Report are given relating to the subject of the particular volume.

BUDGET OF THE

REVENUE

216,840,000,000 Rubles

Increase of 21% on previous year



TURNOVER TAX
on Industry and State and
Co-operative Trade
124,500 million rubles.



PROFITS TAX
31,000 million rubles.



**STATE SOCIAL
INSURANCE**
10,000 million rubles.



STATE LOANS
13,000 million rubles.



**INCOME AND
AGRICULTURAL TAX**
10,842 million rubles.



OTHER ITEMS
27,498 million rubles.

Each circle equals 1% or 2,168.4 million rubles.
Black circles denote increase over previous year.

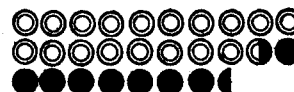
*The basic source of this diagram is the speech by
U.S.S.R., made at the 8th Session of*

U.S.S.R. FOR 1941

EXPENDITURE

216,052,000,000 Rubles

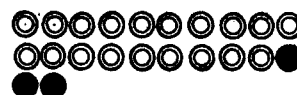
Increase of 23% on previous year



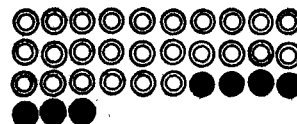
NATIONAL ECONOMY
New Factories, Mines, Elec-
tric and Power Plants,
Transport and Communica-
tions, Research, etc.
59,320 million rubles.



AGRICULTURE
Credits and Technical
Equipment to Collective
Farms, 387 New Tractor
Stations, Experimental Sta-
tions, Irrigation, etc.
13,580 million rubles.



**SOCIAL AND CULTURAL
SERVICES**
Education, Health, Pensions,
Protection of Mothers and
Children, Sanatoria and Rest
Homes, etc.
47,800 million rubles.



DEFENCE
70,900 million rubles.



OTHER ITEMS
24,452 million rubles.

Each circle equals 1% or 2,160.52 million rubles.
Black circles denote increase over previous year.

*Zverev, People's Commissar for Finance of the
the Supreme Soviet in February, 1941*

munist Party of the Soviet Union by N. VOZNESENSKY, the Chairman of the State Planning Committee.

"The National economy of the U.S.S.R. is developing systematically in accordance with the laws of extended socialist reproduction, which implies, first and foremost, a steady growth of production in all branches of the national economy."

"In the first three years of the Third Five-Year Plan, the industrial output of the U.S.S.R. increased from 95,500 million rubles in 1937 to 137,500 million rubles in 1940, or by 44 per cent. This includes an increase in the output of the machine-building and metal-working industry by 76 per cent.

"In respect to the output of the defence industry, the government was guided by a simple truth, namely, if you want to be prepared for any 'surprises,' if you do not want our people to be caught unawares, keep your powder dry and do not stint means on the production of aircraft, tanks, armaments, warships and shells.

"The output of means of production in industry in 1940 increased by 13.8 per cent as compared with 1939, and by 52 per cent as compared with 1937. The output of articles of consumption increased in 1940 by 7 per cent as compared with 1939 and by 33 per cent as compared with 1937. The increase of production in the Soviet Union was accompanied by a reconstruction of industry, especially of the machine-building industry, for the purpose of producing the most advanced and up-to-date equipment needed by the national economy and for the defence of the country. . . .

"Extended Socialist reproduction further implies a steady increase in socialist accumulation, which is above all apparent in the level of capital investment."

"Total capital investments in the national economy of

the U.S.S.R. amounted in 1940 to nearly 38,000 million rubles (including about 6,000 million rubles of decentralized capital investment).

"During the first three years of the Third Five-Year Plan, the volume of capital investments in the national economy of the U.S.S.R. totalled 108,000 million rubles (including 17,500 million rubles of decentralized capital investment).

"During the first three years of the Third Five-Year Plan state industry (not including district industry of a local character) was reinforced by the putting into operation of about 2,900 new mills, factories, mines, power stations and other plants. Let me remind you that throughout the whole period of the first Five-Year Plan a total of 1,500 new industrial plants were put into operation in the U.S.S.R.

"The effect of the new plant put into operation in the first three years of the Third Five-Year Plan has been to increase the capacity of the coal mines by 51 million tons, the capacity of the power stations by approximately 2,400,000 kilowatts, the capacity of the blast furnaces by 2,900,000 tons of pig iron, the capacity of the cotton textile mills by about 1,000,000 spindles, besides other production capacities. . . .

"Extended socialist reproduction in the U.S.S.R. further implies a steady rise in the material standard of the working people, an increase in their consumption."

"The absolute increase of the national income in the first three years of the Third Five-Year Plan, calculated at fixed prices, amounted to 29,500 million rubles, the rise being from 96,000 million rubles in 1937 to 125,500 million rubles in 1940.

"The aggregate pay-roll in the national economy of the U.S.S.R. increased, in the branches of industry envisaged

in the Third Five-Year Plan, from 82,200 million rubles in 1937 to 123,700 million rubles in 1940, or by 50 per cent.

"The monetary incomes of the collective farms increased from 14,200 million rubles in 1937 to 18,300 million rubles in 1939. Preliminary data for 1940 indicate a further considerable increase in the incomes of the collective farms, in money and in kind, as compared with 1939. State and co-operative retail trade increased from 126,000 million rubles in 1937 to 174,500 million rubles in 1940.

"Thus, in spite of the hostilities on the frontiers of the Soviet Union in 1939 and the beginning of 1940 the national economy of the U.S.S.R. has in the past year made a big stride towards the fulfilment of the Third Five-Year Plan, confidently gaining momentum from month to month.

"Of the results for 1940, special mention should be made of the beginnings of a considerable increase in the smelting of metal and the extraction of fuel. Towards the end of 1940 the average daily output of pig iron had increased to 46-47,000 tons, as against 40,000 tons at the end of 1937. The daily output of steel increased to 58-59,000 tons as against 50-51,000 tons at the end of 1937.

"The daily output of coal in the mines of the People's Commissariat of the Coal Industry had increased by the end of 1940 to 467,000 tons, as against 370,000 at the end of 1937. The average daily output of oil and oil-gas at the end of 1940 had risen to 97-98,000 tons, as against 84-86,000 tons at the end of 1937."

THE U.S.S.R. AS A WORLD ECONOMIC POWER

By E. Varga

DIRECTOR OF THE INSTITUTE OF WORLD ECONOMICS AND POLITICS
OF THE ACADEMY OF SCIENCES OF THE U.S.S.R.

A VAST territory, inexhaustible natural resources and a numerous and fastly increasing population form the natural basis for the rapid progress of the Soviet Union.

The tsarist government proved unable to develop the productive forces of the country. In spite of immense natural wealth, Russia was an agricultural country with a backward industry. The people were poor and uneducated. Nearly three-quarters of the population were unable to read or write.

It was only when civil war and foreign intervention had ended that the Soviet Union was in a position to begin utilizing the natural resources of the country. Eighteen years of peace have been enough for the attainment of immense economic progress.

The Soviet Union is the largest country in the world. It has an area of 8,220,000 square miles.¹ The United States (including Alaska and other possessions) has an area of 3,145,000 square miles; China 4,092,000 square miles; Brazil 3,282,000 square miles.

Except for some islands in the Arctic, this huge territory comprises one unbroken land mass. It stretches in a broad belt along the northern half of Europe and Asia from Finland in the West to the Japan Sea and the Pacific Ocean in the East. In the North-East, by the way of Bering Straits, the Soviet Union borders on Alaska. From North to South, the U.S.S.R. stretches from the

¹ The figures given here for the area, and below for the population, of the Soviet Union refer to 1938, that is to say before the admission of the Baltic States and the incorporation of territory in Finland, Bessarabia and North Bukovina. To-day the total area of the Soviet Union is 8,340,479 square miles, while the population is increased by over 20 million.

North Pole deep into the heart of Asia.

The Soviet Union has a population of 170,467,186, only less than China and India. The growth of population is unusually rapid. Since 1920, the population of the U.S.S.R. has increased by 35,900,000 persons, and since the census of 1926 it has increased by 23,439,271 persons.

Despite this rapid growth of population, there is no danger of so-called "over-population" in the U.S.S.R. There are no "surplus" or "redundant" workers, peasants or intellectuals. On the contrary, unemployment is entirely unknown in the country and there is a tremendous demand for people of every kind of profession in all branches of economic and cultural activity.

The natural resources of the Soviet Union are immense. It has extremely rich deposits of minerals of all kinds, the geological investigation of which is being conducted with great energy. The known geological reserves of oil today amount to 8,700,000,000 tons (in tsarist times they were estimated at 800,000,000-900,000,000 tons). The oil reserves of the U.S.S.R. exceed those of all other countries of the world combined. The known coal reserves have increased in the last 20 years from 230,000,000,000 tons to 1,654,000,000,000 tons. The coal reserves of the U.S.S.R. are second only to those of the U.S.A. The U.S.S.R. has the largest water power resources in the world, and the largest deposits of minerals suitable for fertilizers, and of manganese and ferrous ores. The deposits of high-grade ferrous ores (with an iron content of about 62 per cent) are estimated at 10,600,000,000 tons. This does not include the huge deposits (estimated at 250,000,000,000 tons) of the poorer ferrous ores of the famous Kursk Magnetic Anomaly. The Soviet Union is rich in non-ferrous metals—copper, zinc, lead and rare metals; it has vast deposits of gold.

The U.S.S.R. has the largest timber resources in the world. Thirty-eight per cent of its surface is covered by forest. From the

Finnish border along the northern part of the U.S.S.R., in Europe and Siberia, there stretches a vast forest zone about 600 miles wide. Here there are still millions of square miles of virgin timber which have never been touched by the hand of man. The forests of Siberian conifer constitute the last important source of supply for the world's paper industry.

In respect to fertility and suitability for agricultural purposes, the soil of the Soviet Union is unsurpassed. Of a total arable area of about 1,037,400,000 acres, only about 333,450,000 acres have as yet been brought under cultivation (including 247,000,000 acres under cereal crops). The following table, based on statistics compiled by the International Agrarian Institute in Rome for 1935-36, shows the relative grain areas and output of the Soviet Union and other countries.

		GRAIN AREA (acres).			
		<i>Wheat</i>	<i>Rye</i>	<i>Barley</i>	<i>Oats</i>
U.S.S.R.	...	96,330,000	59,250,000	22,230,000	44,460,000
Other countries	...	249,470,000	46,930,000	71,630,000	101,270,000
Of which:					
U.S.A.	...	59,280,000	2,470,000	7,410,000	34,580,000
		GRAIN OUTPUT (millions of tons)			
		<i>Wheat</i>	<i>Rye</i>	<i>Barley</i>	<i>Oats</i>
U.S.S.R.	...	...	31	21	9
Other countries	...	...	97	25	34
Of which: U.S.A.	...	...	17	1	6

It is clear from these figures that the Soviet Union holds the leading place in the world's production of grain. It accounts for about one-quarter of the world's output of wheat, nearly one-half of the output of rye and over one-quarter of the output of oats. In recent years agriculture in the Soviet Union has made considerable progress, and the above figures have been greatly exceeded.

Before the war there were about 20,000,000 peasant farms on the present territory of the Soviet Union. They cultivated the soil with the most primitive implements. A census taken in 1910 shows that the peasants had ten million wooden ploughs and 17,700,000 wooden harrows. Thanks to collectivization, the situation has radically changed in the past ten years. The peasant's house, household garden and orchard, cow, pigs and poultry used for the requirements of his family, constitute his "family farm" and continue to remain his personal property. The land, however, forms part of the large-scale farm run on collective lines with the most modern agricultural machinery. Data for January 1939 show that the equipment at the disposal of the collective farms includes 475,000 tractors, 150,000 harvester combines, over 170,000 motor trucks, hundreds of thousands of tractor-drawn ploughs machine threshers and other machines.¹ Up-to-date agricultural equipment is employed more effectively and efficiently in the U.S.S.R. than anywhere else in the world.

Besides the employment of modern machines, other methods are being adopted for the improvement of harvests. In regions subject to drought, wooded zones are planted as a protection from the dry winds. Irrigation is bringing millions of acres of new land under cultivation. The use of sorted seed has assumed large dimensions. The method of vernalization, a highly valuable discovery of Soviet scientists, is raising the crop yield considerably. The experience of Canada in the selection of early-maturing varieties is being borrowed to spread agriculture farther and farther to the North. The northward advance of fruit growing has also been made possible by the methods devised by the famous horticulturist I. V. Michurin.

As a result of these measures, agricultural output in the U.S.S.R. is now double that of 1913.

¹ For further information as to the development of Soviet Agriculture, see No. 2 of this series: *Agriculture and Transport*.



THE
MAKEYEVSKY
WORKS

The Best Metal-
lurgical Works in
the Soviet Union

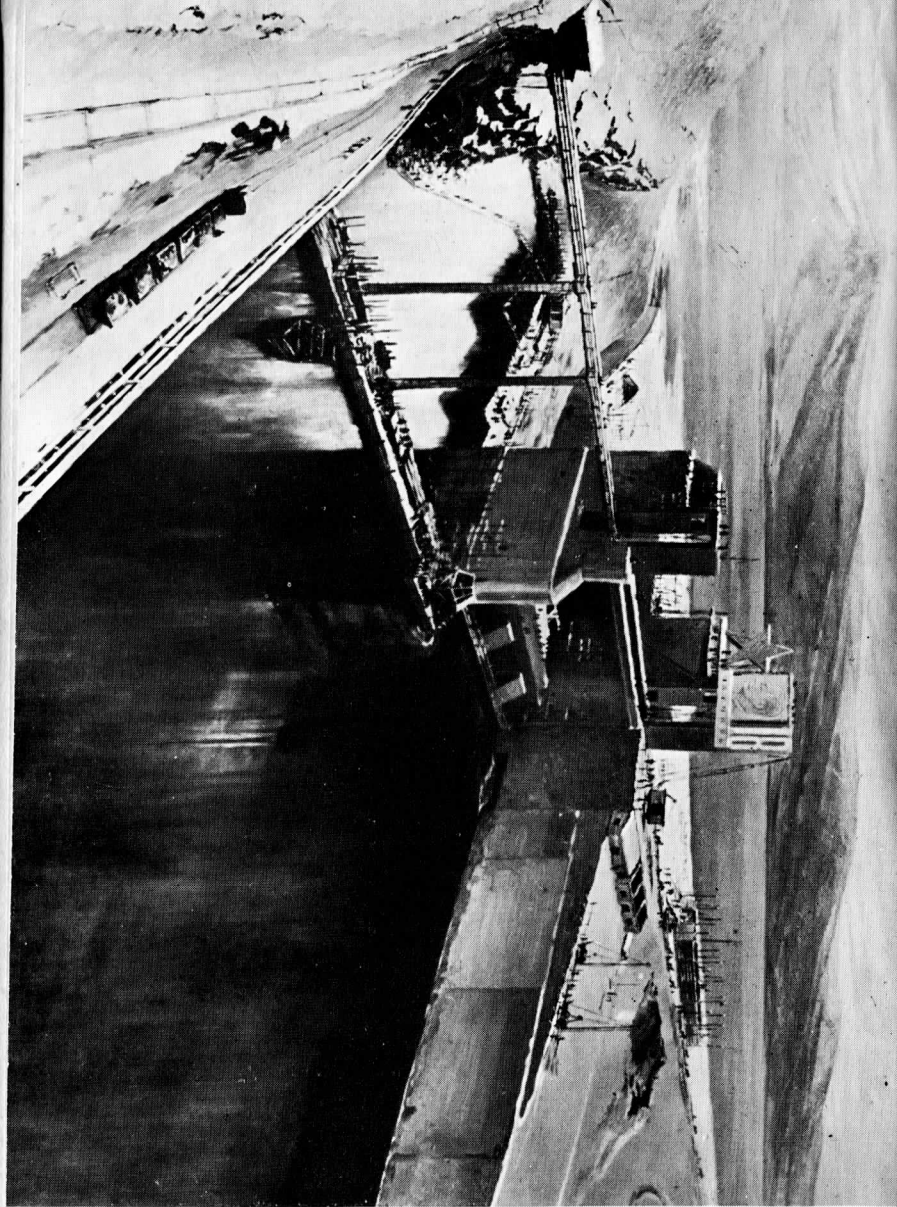
Industry in the Soviet Union has made immense progress during the past ten years. Russia in tsarist days was a poor, agrarian country. The peasants starved, but the country exported agricultural produce in abundance, purchasing from abroad machinery, manufactured goods and luxury articles. The majority of the industrial plants in Russia belonged to foreign capitalists—British, French, Belgian and German. Of this pre-war industry, practically nothing is left today. An absolutely new industry has sprung up in its place. New branches of manufacture have been created which were unknown in Russia in tsarist times: machinery, tractors, automobiles, aircraft, harvester combines, chemicals, etc. In this the Soviet Union was aided by American engineers and skilled workers.

By 1937, over 80 per cent of the industrial output of the country was already being derived from new plants which had been built or entirely reconstructed in the period of the First and Second Five-Year Plans. Today the proportion of output from new plants to total output is even greater.

In no other country in the world is industry equipped with such new and up-to-date machinery as in the Soviet Union.

The rapid increase in the number of industrial plants has been accompanied, especially in the last ten years, by a rapid increase of output.¹ Whereas, after the severe economic crisis which began in 1929, industrial output in capitalist countries attained in 1937 barely 103.5 per cent of the output of 1929, and in the second half of 1937 again declined under the influence of a new crisis, the total output of industry in the U.S.S.R. in 1937 amounted to 424 per cent of the output of 1929, which signified a seven-fold increase compared with pre-war output. In 1938 the total industrial output of the U.S.S.R. attained 477 per cent of the level of 1929. In the capitalist countries, on the other hand, industrial output in

¹ This was written in 1938. For the latest figures the reader should consult the *Publishers' Note* to the present volume.



ELECTRIC
POWER PLANT
IN TULOMSK
From a Painting

1938 was 13.5 per cent less than in the previous year and dropped to 91 per cent of the level of 1929.

Its immense growth of industrial output in the past ten years has advanced the Soviet Union to the ranks of the foremost industrial countries. Its output is now the largest in Europe and the second largest in the world, yielding place only to that of the United States. However, as regards industrial output per head of population, the Soviet Union still lags behind a number of the leading capitalist countries. In its Third Five-Year Plan, the U.S.S.R. is tackling the task of making good this lag.

The Soviet Union has immense achievements to record in the sphere of productivity of labour. During the Second Five-Year Plan alone (1933-37), productivity of labour in large-scale industry increased by 82 per cent (as against a planned increase of 63 per cent for this period); the increase in the building industry was 83 per cent. The movement of the Stakhanovites—that is, workers, peasants and others who have mastered the technique of their jobs and who set unprecedented records in productivity of labour—is spreading wider and wider. This is facilitated by the veritable cultural revolution that took place in the U.S.S.R. during the period of the Second Five-Year Plan. In that period the number of elementary and secondary school pupils increased from 21,300,000 to 29,400,000, the number of pupils in the 5th-7th year groups having doubled, and the number of pupils in the 8th-10th year groups having increased fifteen-fold.¹

Immense educational and cultural work is being carried on. Illiteracy, that shameful heritage of tsarist times, has disappeared. Nearly all workers receive a technical training at spare-time courses. The result of the tremendous increase in the number of schools is that an even larger proportion of the young workers now entering employment have received a secondary education.

¹ For more detailed information with regard to education and culture, the reader should consult Nos. 3 and 4 of this series: *Democracy in Practice and Culture and Leisure*.

This, together with the expansion of industry and the progress in industrial technique, guarantees a continuous rise in productivity of labour.

In the days when economic disruption was at its height, Lenin set before the Soviet country the aim of overtaking and outstripping the technically and economically advanced capitalist countries. Today we see this bold aim being realized.

The building of a new industry was accompanied by the reconstruction of the railroad system. The total freight carried in 1938 was 229,210,000,000 ton-miles, as compared with 105,259,000,000 ton-miles in 1933. Total length of railroad line reached 54,000 miles in 1938, as against 36,000 miles in 1913. The Soviet Union is second only to the U.S.A. in length of railroad line. However, in view of the gigantic requirements of the country, the present length of line is obviously inadequate. The construction of new lines is proceeding steadily; in the period of the Third Five-Year Plan it is proposed to put into operation 6,800 miles of new railroad.

The Soviet Union has the largest length of navigable river in the world. The number of navigated and timber-floating routes in operation is increasing from year to year, their total length amounting to 83,000 miles in 1938, as compared with 47,000 miles in 1913. Canal construction is making it possible to create a connected system of waterways covering the whole country. The canals now under construction will interconnect the Black Sea, the Sea of Azov, the Caspian Sea, the Baltic, and the Arctic Ocean.

The vast territory of the Soviet Union necessitated the utmost development of aviation. In 1938, the total length of regularly operated air route was 71,000 miles.

The rapid industrial growth of the Soviet Union has emancipated it from the foreign dependence to which tsarist Russia was subject. This was essential not only from the economic standpoint, but also to render the country capable of defending itself from the

frankly aggressive intentions of certain neighbouring states. The Red Army is being supplied by Soviet industry with all it requires to repulse an aggressor. Had it not created its own heavy industry—the manufacture of machinery, chemicals, etc.—the Soviet Union would have been defenceless in face of the threatened attacks of fascist aggressors.

However, the U.S.S.R. has made itself independent of foreign countries not with any idea of economic self-sufficiency or of deliberately curtailing its foreign trade. On the contrary, the next few years will undoubtedly witness a growth in the foreign trade of the Soviet Union.

It is worth noting in this connection that the Soviet Union has no foreign debt. It always meets its current obligations with the utmost punctuality, in sharp contrast to most capitalist countries, which during the crisis of 1929-33 suspended payment on their foreign loans. The large and rapidly growing gold industry of the Soviet Union enables it to increase its imports without having recourse to foreign borrowings.

The factors which have promoted the U.S.S.R. to a foremost place among the economic powers of the world, second only to the U.S.A., are its vast natural resources, the rapid increase and cultural development of its population, and its social system, which precludes the possibility of economic crises and under which any increase in production benefits all citizens. There is no obstacle to the further progress of the Soviet Union except the menace of foreign attack.

PLACE OF THE U.S.S.R. IN WORLD PRODUCTION.¹

	1913		1936	
	Place in World	Place in Europe	Place in World	Place in Europe
Gross industrial output	5th	4th	2nd	1st
Machine building	4th	3rd	2nd	1st
Agricultural machine building ...	5th	3rd	1st	1st
Tractors	—	—	2nd	1st
Harvester combines	—	—	1st	1st
Automobiles and trucks	—	—	6th	4th
Of which: trucks	—	—	2nd	1st
Electricity	15th	7th	3rd	2nd
Coal	6th	5th	4th	3rd
Iron ore	5th	4th	2nd	1st
Steel	5th	4th	3rd	2nd
Raw copper	7th	3rd	5th	1st
Aluminium	—	—	3rd	2nd
Gold	4th	1st	2nd	1st
Superphosphates	16th	13th	3rd	1st
Beet sugar	2nd	2nd	1st	1st

¹ See also the pictorial graph on the back cover of this book.

ECONOMIC PLANNING

By Professor J. Joffe

THE Soviet Union is the only country in the world where crises and unemployment and anarchy of production are unknown; for it is the only country that is developing according to plan. The tremendous advantages accruing from planned economy are felt by every worker, collective farmer and intellectual in the course of the thousand and one little things that make up their everyday life.

Just consider the facts. In the eighteen years since the conclusion of the Civil War, there has not been a single year in which output has declined or has been stagnant. It is already nine years since unemployment was abolished once and for all. The right to work is guaranteed by the Soviet Constitution. And there is not another country in the world that has experienced such rapid cultural progress as the Soviet Union, progress which embraces all parts of its vast territory.

A backward and poverty-stricken country in the past, it has now become a mighty industrial power possessing a first-class army with the most up-to-date equipment.

What is Planned Economy?

The economy of any country is an exceedingly intricate mechanism. That of the Soviet Union includes thousands of factories and mills, 243,000 collective farms, a vast transport system—railways, waterways, motor transport and airways—hundreds of thousands of stores and shops, and an extensive network of schools and other educational establishments.

Every Soviet factory, collective farm, university, etc., functions according to a definite plan. This plan is given the effect of law

and is binding on each and every plant, institution, etc. All the resources of the country are mobilized to fulfil the plan adopted.

The plan of every industrial establishment contains definite figures stipulating the quantity and quality of its output for the coming year. The plan determines production costs, the sales price and marketing conditions of its products, the number of workers, the office and technical staff it is to employ, wages, the standards of labour productivity, the expenditure quotas for raw material, fuel and other supplies and the standards of depreciation of machinery.

Every collective farm receives a plan which stipulates the acreage of various crops, the agronomical measures it must apply, the harvest yield for the various crops, etc.

Every store has a plan fixing its volume of trade and the amount of overhead expenses.

In the Soviet Union, as in a highly developed country, the various branches of economy are closely interwoven and interdependent. This interdependence finds its reflection in the plans of the various branches of the national economy, which provide for such correlation in the development of the various branches of economic life as to secure the most rational and rapid progress of the country as a whole.

The plan for the development of the national economy of the U.S.S.R. is a national programme which defines the work to be accomplished by tens of millions of people. This circumstance means that highly important and intricate demands are made of the plan and presupposes the existence of such conditions as ensure the possibility of carrying out planned economy.

The Organization of Planning.

In the Soviet Union the land, industry, the banks and the transport system are state property, that is, belong to the whole people.

All industrial establishments, state farms (large state-owned agricultural establishments), trading enterprises, schools, universities, medical institutions and other economic or cultural institutions and establishments are under the jurisdiction of the various People's Commissariats.

The work of the collective farms is governed by a special set of rules adopted separately by each collective farm on the basis of the Model Collective Farm Rules adopted by the Second All-Union Congress of Collective Farm Shock-workers and endorsed by the government. In conformity with these Rules, the collective farms conduct their work according to plan and strictly adhere to the production plans fixed by the government. This enables the state to plan agricultural as well as industrial development.

Thus, in the Soviet state all the material wealth of the country belongs to the people. Through its bodies the state directly supervises the entire life of the country, concentrating full power in its hands (endorsement of plans, appropriation of financial and material resources, appointment of executives, etc.).

The drawing up of plans and supervision of their fulfilment is one of the most important aspects of the work of the People's Commissariats. Planning is not the prerogative of any one organization, but a component, organic part of the activities of the whole state and economic apparatus of the country.

The highest organ of state authority of the U.S.S.R. is the Supreme Soviet of the U.S.S.R. The highest executive and administrative organ of state authority of the Union of Soviet Socialist Republics is the Council of People's Commissars of the U.S.S.R., which confirms the national economic plan and supervises its fulfilment.

Attached to the Council of People's Commissars of the U.S.S.R. is the State Planning Commission with a staff of prominent experts in all fields of economy and culture. Similar state planning commissions function under the Councils of People's Com-

missars of the various republics. Planning commissions have likewise been set up under the executive committees of Soviets of all territories, regions and districts of the U.S.S.R.

The plans for the various industries are drawn up by the People's Commissariats, which maintain planning departments for this purpose. Planning departments have been similarly set up in all factories, mills, institutions, etc.

Thus, there are no organizations in the U.S.S.R. engaged in abstract planning. All state bodies have planning departments or commissions under them and this ensures unity of leadership.

How Plans are Drawn Up.

The method by which plans are drawn up may best be illustrated by the example of the annual plans for industry. Besides annual plans, however, it is also the practice in the U.S.S.R. to draft quarterly plans, which, as part of the yearly plan, provide a concrete programme for the current three months.

Work on drawing up the annual plans usually begins six or seven months before the new year.

On the basis of data submitted by the People's Commissariats and the State Planning Commission, the government sums up the results of plan fulfilment for the current year. In these summaries, which are based on a profound and thorough analysis of the economic trends in the country, the government rates the progress made in the fulfilment of the yearly plan and the Five-Year Plan as a whole. It establishes which branches of industry, etc., are lagging behind in plan fulfilment and the reasons for this, which branches are successfully carrying out their plans and the means they employ to achieve this. This work furnishes a comprehensive picture of plan fulfilment throughout the country.

Besides summing up results, the government determines the chief tasks that must be carried out in the next few years. These tasks are formulated in the Instructions for Drawing up Plans.

The general features of all economic plans are defined as follows in Article 11 of the Constitution of the U.S.S.R.:

"The economic life of the U.S.S.R. is determined and directed by the state national economic plan with the aim of increasing the public wealth, of steadily improving the material conditions of the working people and raising their cultural level, of consolidating the independence of the U.S.S.R. and strengthening its defensive capacity."

All the elements of the plan are subordinated to the purpose of carrying out these aims.

The preliminary programme fixed by the government gives due consideration to the close connections between various industries. Thus, the programme for increasing the production of pig iron requires a corresponding increase in the output of coke and iron ore. The programme for increasing school attendance presupposes a preliminary investigation as to how the additional school children will be provided with school buildings, teachers, textbooks, budgetary funds, etc. Hence, the focal point in the work of all planning bodies is to map out correct proportions for the development of the various branches of economy and culture.

The Soviet Government bases its plans on a detailed calculation of potentialities.

In working out the preliminary plan, the planning commissions and the government carefully ascertain the visible natural resources, the extent to which they have been prospected and the possibilities of their industrial exploitation, the existing production capacity and the extent to which newly built establishments are ready for operation, the amount of available labour, power, etc.

However, existing production capacities cannot serve as the sole criterion in mapping out production programmes if the government is convinced that a drastic increase in the output of one branch or another branch of industry is necessary.

A striking instance of this was the 1935 plan for the construction of railroad cars.

In 1934 the Soviet railroads were unable to meet the demands made upon them by industry and agriculture. Among other measures designed to improve the situation the Soviet Government decided drastically to increase the number of railroad cars. The table below shows the increase in annual output of cars up to 1934 (computed in two-axle units):

1913	...	...	...	...	14,832
1932	...	...	...	...	23,111
1933	...	...	...	...	23,614
1934	...	...	...	...	33,513

The capacity of the car building plants equalled approximately 40,000 cars a year.

The government decided that to ensure the smooth functioning of the transport system industry must triple the production of cars in one year's time and place 90,000 cars on the line in 1935.

Other factories co-operated in carrying out this task. This did not present any particular difficulties, for the entire industry of the country is the property of the whole people and is in the hands of the state. As a result of all the measures taken, 90,758 cars were built in 1935.

This example illustrates the tremendous potentialities of the national economy when it is organised as one planned whole.

Key Problems.

In the instructions for drawing up the plan the government indicates the key problems for the period covered by the plan, it specifies the industries that will play a decisive part in fulfilling the plan and formulates their basic tasks.

The determination of the key problems is a factor of great importance in drawing up plans, for the plan fulfilment of all

other branches of industry is regarded from the standpoint of the extent to which they ensure the fulfilment of the plan for the key industry.

The selection of one or another key problem for the period covered by the plan depends on the general economic and political tasks facing the country.

Thus, for example, the chief economic task confronting the country in the Second Five-Year Plan period (1933-37) was the technical reconstruction of the Soviet national economy, the introduction of up-to-date machine technique in all branches of the national economy. In view of this, the development of the machine building industry was singled out as the key problem of the plan. The plans for the development of the iron and steel industry and of non-ferrous metallurgy and the plans for capital construction were considered from the point of view of the extent to which they would ensure the development of the machine-building industry.

During the Second Five-Year Plan period the output of the machine-building industry increased from 9,400,000,000 rubles in 1932 to 27,500,000,000 rubles in 1937.

Participation of the Masses in Drawing Up the Plan.

When the People's Commissariats receive the government instructions for drawing up their plans they proceed to determine the preliminary programmes of each of the industries under their jurisdiction. The Chief Administration of the given industry defines the plan for each establishment under its control.

These preliminary plans are then discussed by both the management and the trade union, as well as other public organizations of the establishment. At their production conferences the workers and employees discuss whether all potentialities for increased output, higher labour productivity and reduction in production costs have been taken into account. These conferences thoroughly analyse

the experience of production brigades and of Stakhanovite workers who have attained a high degree of efficiency, and make amendments to the proposed plan based on the specific nature and potential capacity of the given establishment.

All these plans, with additions and amendments, are then returned to the respective People's Commissariat, which, after due examination, draws up a single, uniform plan for the whole Commissariat and submits it to the government for approval. At the same time, on the basis of data furnished by the establishments and industries under its control, the People's Commissariat submits to the government an estimate of the amount of fuel, electric power, raw material, working capital and funds for capital investment required for the fulfilment of its production programme.

Endorsement of the Plan.

All plans submitted to the government for endorsement are first of all studied by the State Planning Commission which submits its opinion on each of these plans.

In formulating the final plan for the various People's Commissariats, the government takes into account the findings of the experts consulted and of the State Planning Commission. The plan adopted by the government becomes law.

On the basis of the plan adopted by the government, the People's Commissariats establish the mandatory production programme for each of their establishments.

The working people of the Soviet Union not only take part in the discussion and drawing up of the plans, but are also vitally interested in their fulfilment. The production programmes laid down by the government are the minimum of what must be accomplished. It is a matter of honour for the workers of every factory to overfulfil their plan. Premiums are awarded to individual workers and factory managers who succeed in overfulfilling the plan.

The foremost people in industry, agriculture, transport, education, art, trade and other spheres of activity are accorded high honours and enjoy great popularity. Thousands of them have been decorated by the government for their exemplary work.

The Plan and Science.

The principal aim of planning in the Soviet Union is to ensure the further development of the national economy, to raise the cultural level of the country and improve the material conditions of the population.

All tasks included in the plan are based on the maximum introduction of the latest achievements of science and technology, on the most rational and comprehensive utilization of the country's natural resources, on making human labour easier and increasing its efficiency.

This cannot be accomplished without the active participation of the country's scientific forces in the work of planning and without the development of the country's scientific institutions.¹

A component part of the plan is the system of technical and economic indices, which has been elaborated for all branches of the national economy. These indices prescribe the technological standards, the expenditure quotas for raw materials, fuel and supplies, the proper utilization of equipment, the basic quality standards of goods produced.

These indices are worked out on the basis of the experience of the foremost industrial establishments both in the U.S.S.R. and in other countries and aim at gradually raising the whole of the national economy to ever higher technical standards.

One of the most important aspects of planning is the study of the country's natural resources, their effective utilization and the

¹ The reader interested in the organisation of science will find further information in the article *Planning Science*, by Academician Bach, in No. 4 of this series.

proper distribution of the thousands of new establishments that are to be built.

Finally, it should be mentioned that a number of important economic problems requiring prompt solution arise in the process of planning. These problems deal with the establishment of definite proportions in the development of the various branches of industry, the correlation of prices, the working out of the economic basis for new construction work, etc.

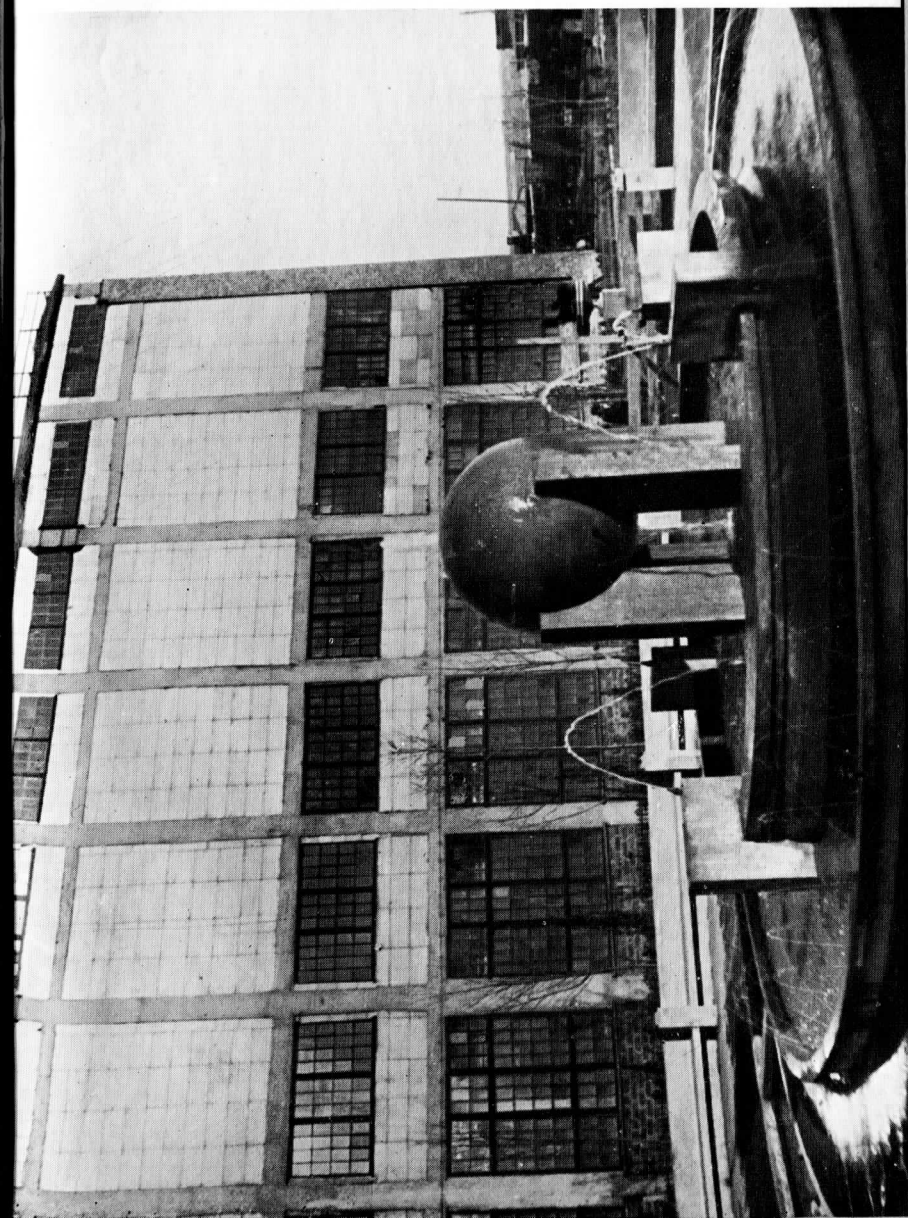
The staff of the State Planning Commission of the U.S.S.R. includes prominent engineers, technical experts, geologists, physicists, economists and specialists in other fields. Besides, all the People's Commissariats, the various planning organisations and the State Planning Commission of the U.S.S.R. invite the Academy of Sciences and other scientific research institutions to collaborate in the work of drawing up the plan. As a result of this joint work, the national economic plans of the Soviet Union serve as a powerful means of introducing the achievements of science into all branches of economy and all spheres of cultural endeavour.

Hundreds of scientific research institutions have been founded in the U.S.S.R. and many of them have gained world-wide repute. The work of Soviet mathematicians and geologists, and the work of the Institute of Experimental Medicine, in particular, enjoy well-earned fame. All scientific research institutions are financed by the state.

Supervision of Plan Fulfilment.

Drawing up the plan is only the first stage of the work of planning. Execution is no less important. This depends primarily on the proper organization of the work of the millions of people who have to fulfil these plans.

The government organizes constant control over plan fulfilment, thus ensuring the timely carrying out of the plan. But this control is not the function of state organs alone. The working people



themselves take part in it. Figures on plan fulfilment in the key industries are published in the newspapers daily and are thus available to the general public.

The government closely follows the course of fulfilment of the plan, directs the activities of all state and co-operative organizations and, when necessary, renders assistance to them.

The instructions and assistance given by the government are a tremendous mobilizing and organizing factor, not only in respect to those industries or establishments for which they are intended but for the entire national economy. A few years ago the coal industry displayed a tendency to lag behind. The government and the Central Committee of the Communist Party called together the best miners for a conference in Moscow. The speeches of these rank-and-file workers revealed the cause of this lagging. On the basis of the factual material supplied by this conference, the government ordered that the system of wages be revised, that engineers and technicians be assigned to work directly in the pits, etc. These measures soon brought results—coal output began to climb, increasing by 23 per cent in one year.

Besides assistance in the form of instructions, advice and the assignment of additional forces, the government, in the case of many factories, allots additional funds and materials and extends the scope of capital construction.

This day-to-day supervision and assistance is one of the most important and decisive factors of planning in the Soviet Union.

The Advantages of Planned Economy.

The Soviet Union, the only country in the world where planned economy reigns supreme, is developing at a rate unparalleled by any other country in the world. A comparison of the development of industry in the Soviet Union with that of the principal capitalist countries in the period from 1913 to 1938 shows that while in the capitalist countries industry is practically stagnant at pre-war

cl

level, exceeding it at times by no more than 20-30 per cent, the industry of the Soviet Union has surpassed the pre-war level more than ninefold. While the world output of wheat has increased by 26 per cent since 1913, in the Soviet Union it has increased by 114 per cent. The yield of cotton in the U.S.S.R. increased 242 per cent during this period, while the increase in world output was only 30 per cent; the output of sugar-beet in the Soviet Union doubled, while world output rose only 26 per cent.

The advantages of planned economy have also found expression in the steadfast improvement of the material conditions and the rising cultural level of the population.

The steady growth of industry, agriculture, transport, education, etc., has led to the fact that every year hundreds of thousands of people are being drawn into the active life of the country. There were 22,000,000 industrial workers and employees in the U.S.S.R. in 1933, while by 1938 this number had risen to 28,000,000. During the same period the national payroll increased from 34,953,000,000 rubles to 96,425,000,000 rubles. The average annual earnings of industrial workers increased from 1,513 rubles in 1933 to 3,447 rubles in 1938. The monetary incomes and incomes in kind received by the collective farmers have also shown a marked increase during these years. The best indication of the growth of the country's public wealth is the national income, which has mounted from 48,500,000,000 rubles in 1933 to 105,000,000,000 rubles in 1938.

Material happiness always rests on figures, as the French writer Balzac justly wrote. The figures cited above illustrate the growth of the might, wealth and culture of the first Socialist state in the history of mankind, a country run according to plan.

What are the necessary conditions of Economic Planning?

The private ownership of the means of production has been abolished in the Soviet Union. The means of production are the

property of the whole people. Hence, every enterprise is operated not with a view to increasing the profits of a private owner, but in the interests of the whole people.

The steady improvement in the standard of living of the working people creates an unlimited home market. The continuous growth of the incomes of the working people ensures a ready market for the ever-increasing output of Soviet industry and agriculture.

The abolition of the private ownership of the means of production and the concentration of the administration of the national economy in the hands of the state provide the necessary conditions for the harmonious development of all industries. This excludes the possibility of over-production in any branch.

And, finally, a factor of vital importance is the moral and political unity of the Soviet people, the absence of exploitation, the deep interest of all the working people in the development of their country, their branch of industry, their factory or other institution. The direct connection between the growth of the country's public wealth and the material standards of each working man is so obvious that it serves as a powerful stimulus for the active participation of the whole people in the administration of the country in accordance with a uniform Socialist plan.

MINERAL RESOURCES OF THE U.S.S.R.

By I. M. Gubkin

MEMBER OF THE SUPREME SOVIET OF THE U.S.S.R.
VICE-PRESIDENT OF THE ACADEMY OF SCIENCES OF THE U.S.S.R.

THE Union of Soviet Socialist Republics occupies an area of 8,221,000 square miles, covering a huge part of the Eurasian continent.¹ From the geological standpoint its territory represents a rich complex of formations of highly varied structures and ages.

In pre-revolutionary times, useful minerals were studied in Russia by great scientists like Lomonosov and Karpinsky. The former is justly regarded as the founder of the science of geology in Russia; the latter as the father of Soviet geology. The science reached its full amplitude of development, however, only after the establishment of the Soviet government in the period of the First and Second Five-Year Plans.

In tsarist days, the mining industry was concentrated at three or four points, chiefly in the European part of the country. There were only a few small mining centres in the Asiatic part—in the Altai Mountains (non-ferrous metals) and at Kuznetsk (coal). The mines, as a rule, belonged to foreign capitalists.

The Geological Service confined its activities chiefly to geological charting; it did practically nothing in the way of exploring and prospecting for useful minerals. The number of geologists was ridiculously small, there being no special schools to train them.

The fact that the mineral resources of the country were almost entirely unknown created difficulties for the Soviet government in its very earliest years. The rapid expansion of industry created an enormous demand for ores and fluxes. Mineral fertilizers were

¹ See footnote on p. 13.

needed for agriculture. The chemical and other industries were also clamouring for raw materials.

As we know, the First Five-Year Plan, despite the vastness of developmental work it envisaged, was fulfilled in four years, some of the most important branches of the mining industry—oil, for example—fulfilling their plans even in 2½ years. This was accomplished in the face of tremendous difficulties and obstacles, which, in the case of minerals, were still further complicated by the fact that they not only had to be discovered, but to be discovered and surveyed precisely in the places where they were needed.

In the past, the concentration of industry in the European part of Russia was due to the colonial policy of the tsarist government. The more remote regions of the country, occupied mainly by non-Russian peoples, were looked upon by the government purely as reserves for the supply of Central Russia with agricultural produce. As a consequence, the vast mineral deposits of Siberia, Kazakhstan, Central Asia and the Caucasus (with the exception of oil in the case of the latter) not only remained unutilized, but were not even discovered and studied.

About 90 per cent of the coal output of Russia in tsarist times came from the Donetz Basin; over 60 per cent of the iron ore from Krivoi Rog; and 95 per cent of the oil output from the Baku fields. This meant that oil had to be transported to Siberia and the Far East from Baku, a distance of thousands of miles; and the position was very much similar in the case of coal and the products of the metallurgical industry.

The tremendous developments planned by the Soviet government demanded the rapid and systematic study of the productive forces of the country, including its mineral resources. This, in turn, demanded the development of geological exploration and survey on a very wide scale.

The first task undertaken was the training of skilled forces for this work, for which purpose a number of specialized medium

and higher educational establishments were opened. By the time the First Five-Year Plan was inaugurated, thousands of geologists were already engaged in studying the mineral resources of the U.S.S.R. Today the number of Soviet geologists can be counted in tens of thousands.

The second step taken by the Soviet government in the realm of geological survey and research was to entrust all branches of the work to one body, the Geological Board. The effect of this was to place geological survey and research on strictly planned and systematic lines, and to ensure the rational employment of men and materials and the rapid and fullest use of the results obtained.

Nowadays, the most up-to-date equipment is used in geological work in the U.S.S.R. Originally it had to be obtained from abroad, but it is now being produced at home.

The abolition of private property in land has opened up unlimited possibilities for geological science in the U.S.S.R. In pre-revolutionary days, the work of the geologist was hampered by the existence of private boundaries, an impediment which has now been entirely removed.

Since the establishment of Soviet government many minerals have been discovered which were formerly unknown in our country—among them apatites, potassium salts and borates.

The apatite deposits of the U.S.S.R. are the largest in the world; those of the Kola Peninsula are estimated at 2,000,000,000 tons.

The potassium salt deposits of Solikamsk are computed at 18,000,000,000 tons (in potassium oxide equivalent). The U.S.S.R. possesses 27,700,000,000 tons of these salts, or 85 per cent of the world's known deposits.

An expedition of the Academy of Sciences has discovered new rich deposits of potassium salts in Western Kazakhstan. Their composition is such as to permit the extraction from them of potassium sulphate—an excellent fertilizer for cotton, tobacco and other crops.

In close proximity, near Lake Inderrich, deposits of borates, the raw material of boron, have been discovered.

The voluntary study, individual and collective, of the natural resources and productive potentialities of the various regions of the country is very widespread in the U.S.S.R. There are large numbers of local natural history societies and clubs, as well as museums, national reserves and so on. Numerous deposits of useful minerals have been discovered by such voluntary organizations.

Important contributions to the knowledge of the natural resources of the country have been made by individual amateurs. The mine laboratory in the village of Bystrovka (Kirghiz Republic), for example, has thousands of specimens of valuable metallic ores found and donated by collective farmers and trappers. Information furnished by a local peasant by name of Mangulov has resulted in the discovery of five outcrops of lead and asbestos.

We shall briefly relate what has been accomplished by the Soviet Union in the location of mineral deposits and economic value.

Power-Producing Minerals.

Oil. In tsarist times the oil reserves of Russia were estimated at eight or nine hundred million tons. A computation made at the time of the International Geological Congress in 1937 placed the figure at 6,500,000,000 tons, the proven oil reserves being computed at 4,000,000,000 tons.

In the course of 1937 and 1938 geological survey work in the Volga region and on the western slopes of the Urals began to yield results.

There has been a considerable increase in the estimated oil reserves of the Azerbaijan Soviet Socialist Republic and other of the older oil-bearing regions, as well as in the recently discovered oil-bearing regions in the Bashkir, Daghestan and other Soviet republics.

In 1938 the geological oil reserves of the U.S.S.R. were estimated

at 8,700,000,000 tons, the proven oil reserves exceeding 4,600,000,000 tons.

There has been a marked change in the geographical disposition of the oil industry, which shows a distinct eastward movement. That considerable oil deposits will be discovered in the near future in Siberia is now beyond doubt.

The known oil reserves of the U.S.S.R. at the present time considerably exceed the aggregate reserves of other countries.

Coal. The geological reserves of coal in Russia were estimated in 1913 at 230,000,000,000 tons. Computations made at the time of the International Geological Congress in 1937 fixed the coal reserves of the U.S.S.R. at 1,654,000,000,000 tons.

Thus, the known coal reserves of the U.S.S.R. have increased sevenfold in twenty years. They are sufficient to cover the country's requirements for several centuries.

The discovery and investigation of new fields has resulted in a considerable change in the geographical disposition of the coal industry. In tsarist times, Russia's coal requirements were almost entirely supplied from the Donetz Basin. Today in addition to this source, the U.S.S.R. derives a substantial part of its coal from the Urals, Kazakhstan, Siberia, the Soviet Far East, Central Asia, the Moscow Region and other fields.

Soviet coals are of exceptionally high quality, only 20 per cent being brown coal, the rest hard coal.

The coal reserves of the U.S.S.R. are exceeded only by those of the U.S.A.

Recent geological investigations furnish grounds for expecting the early discovery of new, rich coalfields, chiefly in the eastern part of the U.S.S.R., the Central Asiatic republics and Kazakhstan.

Ores.

Iron. The geological reserves of iron ore in the U.S.S.R. are

estimated today at 10,600,000,000 tons, against 2,000,000,000 tons in 1913.

In addition, there are vast deposits of ferri-ferrous quartzite (estimated at 250,000,000,000 tons) with an iron content averaging 35 per cent.

The process of extraction of iron from ferri-ferrous quartzite on industrial lines has been fully worked out, but owing to the abundant deposits of iron ore, ferri-ferrous quartzite is regarded as a reserve source of supply.

Chromite. Chromite deposits were entirely unknown in Russia in tsarist times. Deposits of chromite ore in the U.S.S.R. today are estimated at over 16,000,000 tons.

Manganese. Manganese deposits were estimated in 1913 at 167,000,000 tons; today, geological investigations have raised the estimate to 750,000,000 tons. The high quality of Soviet manganese is generally recognized.

Copper. Copper deposits were estimated in 1913 at 62,700 tons (pure metal); the estimate today exceeds 19,500,000 tons.

Aluminium. No deposits of aluminum ore were known in Russia in tsarist times. The U.S.S.R. today has a large aluminum industry, whose ore requirements are entirely home supplied. The earth used is bauxite, the estimated reserves of which exceed 30,000,000 tons.

In addition to bauxite, the U.S.S.R. possesses large deposits of other clays with a large alumina content (nepheline, cyanite, alunite). The process of extraction of aluminium from these earths has been worked out and will be applied on industrial lines.

Chemicals. In this field attention has been mainly devoted to mineral fertilizers, which in tsarist times Russia used to import.

Apatite. As already mentioned, the apatite reserves of the U.S.S.R. are estimated at 2,000,000,000 tons.

Potassium salts. Deposits of potassium salts were unknown in the U.S.S.R. until 1929. The deposits discovered in that year in

Solikamsk contain 18,000,000,000 tons of potassium oxide.

The U.S.S.R. has larger deposits of minerals suitable for fertilizer purposes than any other country in the world.

In recent years rich deposits of boron—the only mineral hitherto not found in commercial quantities—have been discovered in the U.S.S.R.

Thanks to the broad scope on which geological research has been conducted, it is now known that the territory of the U.S.S.R. contains all the useful minerals in commercial quantities.

Geology is held in high esteem by the Soviet government as a science which can contribute largely to the welfare and prosperity of the population.

In the U.S.S.R. the land and its resources belong to the people and are completely at the disposal of the people. And all that is done in the field of geology, the efforts both of the professional and amateur geologists have one purpose in view—to benefit the working people of the country and to further its industrial progress.

THE INDUSTRIAL MIGHT OF THE U.S.S.R.

By I. Bardin

MEMBER OF THE ACADEMY OF SCIENCE OF THE U.S.S.R.

TSARIST Russia was an economically backward country. Her autocratic form of government acted as a brake on the development of her forces of production. This explains her national poverty and economic dependence on the more advanced capitalist countries despite her vast natural resources. To illustrate concretely the low level of her industrial development, suffice it to state that in 1913 Russia occupied 15th place in the world in electric power production, 6th place in the output of coal, 5th place in pig iron and steel smelting and 7th place in copper manufacturing. Many branches of industry, such as the production of aluminium, nickel, rare metals and synthetic nitrogen, did not exist at all. High-grade steels, ferro-alloys and calcium carbide were almost all imported, as were machine tools and other machinery.

The set-back suffered by Russian industry during the war years was catastrophic. Beginning with 1915, output steadily diminished until in 1920 it had dropped to a bare minimum and in some cases come to a complete standstill.

The Soviet government set up after the triumph of the Great October Socialist Revolution fully realized that the building of socialism necessitated a strong industrial base, powerful enough to render the country independent, in respect to its technical and economic requirements, of the hostile capitalist states encircling it, and resourceful enough to reconstruct the several branches of the country's economy, including its industry as well as its agriculture. This new base, once established, would lead to abundance of manufactured goods and agricultural produce, so that all demands of the population could be met.

Nineteen-nineteen and nineteen-twenty were the most difficult years for the young Soviet republic. Enemies encompassed it on every side. It fought valiantly for its life on numerous fronts against the White Guards and the forces of foreign intervention; industry and transportation lay prostrate; the people were famished and lacked the barest necessities; the direful consequences of the Entente blockade were felt everywhere.

In this period of economic storm and stress, Lenin and Stalin organized the people for the struggle against intervention, starvation and blockade. They not only foresaw and formulated the problems awaiting solution by peaceful creative effort, but also prepared the ground for the work which this solution entailed.

This was the time when, under their leadership, two hundred scientists, engineers and technicians drew up a plan for the electrification of the whole country and the introduction of modern machinery as the basis of its economic life.

This was likewise the time when H. G. Wells visited Lenin in the Kremlin and discussed with him this very plan. On his return to England the famous writer referred to Lenin as "the dreamer in the Kremlin." To Wells the drafting of electrification plans for a ruined and starving country, lacking even petroleum, was nothing but idle fantasy. The foreign bankers were of the opinion that without their credits and other assistance the Soviet republic would be unable to resuscitate its economy.

However, the realities of life upset these calculations. In the Soviet Union, where capitalist ownership of the means of production has been abolished, the entire national income is being devoted to a single purpose, namely, to increase output so that the requirements of the population may be satisfied, and to promote the welfare of the people and foster the country's economic development in accordance with a scientifically determined plan. This has enabled the Land of Soviets firstly to restore its economic life, ruined by the curse of war, and secondly to build up a powerful

industry equipped with up-to-date machinery.

By 1928 all branches of industry had been restored to pre-war capacity. At once construction of new modern factories and mills commenced on a large scale. The best types of machinery were acquired; West-European and American production methods were being mastered. A number of state organizations for the designing of construction projects were set up, the staffs of which included prominent foreign talent. Numerous Soviet engineers, particularly of the young generation, were sent abroad to study at leading industrial establishments. The adoption of the First Five-Year Plan by the Communist Party of the Soviet Union (Bolsheviks) and the Soviet Government ushered in a new epoch in the country's history. Its main provisions were the construction of numerous new factories and the economic opening up and development of new districts. Among the projects undertaken, primary importance attached to the creation of a new industrial base located in the east of the U.S.S.R., the building of the Urals and Kuznetsk Basin combine.

In addition to the Magnitogorsk and Kuznetsk steel mills, each of them of record proportions, the list of industrial constructions in this area included numerous other plants—for the non-ferrous metal, the chemical and the machine-building industries. The scale of construction and the difficulties encountered in the organization of production on these projects had never before been paralleled anywhere in the world.

Proper distribution of industrial establishments is not the only accomplishment to the credit of the Communist Party and the Soviet Government. They also successfully tackled the problem of raising labour productivity, which was of the utmost importance to the country. The Communist Party fought energetically against bureaucracy, which shackled initiative at work and hindered active interest in their work on the part of the masses. Socialist emulation was broadly developed and breaches of labour

discipline vigorously combatted. The Stakhanov movement for greater labour productivity, which had its commencement in the coal industry, has since spread to all industries and taken hold of transportation and agriculture. Grounded as it is on the efficient operation of modern machinery, it has wrought a revolution in production.

The new constitution of the U.S.S.R. is the legal enactment of the achievements of its victorious working class, and of the socialist system of society in the country. Planned economy, free of crises and based on the socialist ownership of the means and instruments of production, the right of all to engage freely in creative work, the right to education, the opportunity afforded to every Soviet citizen to develop and apply his talents and abilities, the birth of a new attitude toward work, which is esteemed a matter of supreme honour, have served as the foundation on which the unparalleled success achieved in the transformation of people, society and nature itself is based.

Full of daring, the new Soviet technical intelligentsia is carrying out in real life the transition from the technique of the nineteenth century, and, in a number of branches of industry, from the technique of the middle ages, to the latest technological processes, the most developed that the mind of man has conceived. Much work was needed to train such a generation, and in this work the entire Soviet people, guided by the Communist Party and Stalin, its leader, participated.

The results achieved by socialist labour in heavy industry are especially significant, for the development of heavy industry is a most difficult task even under favourable conditions. An enormous amount of work has been accomplished in this direction. The formerly existing branches of heavy industry have grown several times over and many new branches have been established, including the production of automobiles, aircraft, tractors, harvester combines, high-grade steel, ferro-alloys, nickel, aluminium, mag-

nesium, cadmium, cobalt, tin, a great number of rare metals, plastic material, artificial fibre, industrial and synthetic rubber. In volume of output, Soviet industry has moved from fifth place in the world, occupied by tsarist Russia in 1913, to first place in Europe and second place in the world.¹

In the coal industry output has increased 4.6 times comparing 1913 with 1937, the final year of the Second Five-Year Plan period. This industry has been completely re-equipped. The new coal districts in the east are likewise developing their production. The industry's degree of mechanization (88 per cent) is the highest of any country in the world. The comprehensiveness of this mechanization is a particularly important feature. Not only coal cutting but to a considerable extent all other operations, including preliminary work and the sinking of pits, have been mechanized. Constantly perfecting their old and designing new models, the Soviet mining machinery plants supply the country's coal industry with all the modern equipment it needs.

In the Soviet Union the highly important problem of the subterranean gasification of coal has been solved in its technical and practical aspects. By the application of this Socialist technological process, coal can be used in its most convenient form (gas) and the miner's arduous toil is thus eliminated. Coal gasification has already been placed on a sound basis in the U.S.S.R.

The oil industry has fully mastered the technique of deep-well and high-speed drilling. The old oil fields are being exploited to the best advantage. The continuous prospecting of Soviet geologists for oil deserves particular mention. Their efforts have been crowned with great success: new oil fields have been located and equipped for production in the Urals and the Volga district. Sulphur-bearing oil (mined in the Bashkir Republic) is being refined with considerable success. Cracking and polymerization have made it possible to obtain high-grade aircraft fuel.

¹ This is strikingly illustrated by the graph on the back cover of this volume.

Compared with the output of tsarist Russia, the manufacture of iron and steel has grown more than fourfold. This increase is likewise the result of the introduction of modern machinery and methods. Powerful new, completely mechanized aggregates, blast furnaces, open hearth furnaces, blooming mills and rolling mills of various descriptions have been installed and their operation is being mastered by the Stakhanovites.

High-grade steels and electro-metallurgical alloys are being produced on a large scale. This has enabled the U.S.S.R. to develop its machine-building, aeronautical, automobile and tractor industries and to equip the heroic Red Army with the most up-to-date armament, so that it is prepared to deal a crushing blow to any barbarous horde of fascists that may venture to encroach on Soviet territory.

The U.S.S.R. already occupies second place in Europe and third in the world in the manufacture of aluminium. The building of nickel plants is proceeding apace, assuring increased nickel smelting. Production methods of other non-ferrous and of rare metals have also been mastered and, with the prospecting of the sources of raw materials, their output will rapidly increase.

Very important is the development of the production of numerous aluminium and magnesium alloys, of beryllium bronze and hard alloys with a tungsten and titanium base as well as the manufacture of articles made of tantalum, rubidium, caesium and other such metals. The steadily increasing practice of using substitutes (acid-proof cements, lining tiles, acid-proof earthenware and plastic materials) in place of non-ferrous metals is also worthy of note.

The gold output of the U.S.S.R. has advanced from fourth place in world production (1913) to second place.

Signal successes have marked the road of electrification upon which the Soviet Union has entered. On the threshold of its third Five-Year Plan period, the capacity of the Soviet Union's electric power stations was 7.6 times that of tsarist Russia, while the

amount of electricity generated was 19.3 times the tsarist figure. The coefficient of utilization of station capacity is from one and a half to two and a half times as high as in the capitalist countries. The Lenin Hydroelectric Power Station on the Dneiper alone produces more electricity than did all the stations of tsarist Russia combined.

Remarkable strides have also been made by the Soviet chemical industry which was still in its embryonic state before the revolution. Under the Five-Year Plans, synthetic ammonia works have been built and put into operation in the south, the central districts and the Urals. The output of sulphuric acid has increased more than tenfold since 1913, that of superphosphate more than twenty-fold, etc. In the case of sulphuric acid, the increase is due to the erection and proper utilization of powerful towers as well as the application of Herreshof-Bayer contact processes. Soviet sulphuric acid plants are equipped with the latest mechanized ovens, electric filtration for the purification of the gas and powerful apparatus for the concentration of the acid. The Stakhanovites in these plants have increased the efficiency of the tower and contact processes. Cases are on record where the specified standards have been exceeded by as much as four hundred per cent.

No bakelite or other composition materials were produced in tsarist Russia. Today they are used to manufacture not only numerous industrial supplies but also general consumers' goods.

Whereas before the revolution the annual output of rayon was 140 tons, artificial fibre production has now become a large industry.

The manufacture of synthetic rubber from ethyl alcohol, using the method invented by the late Academician Lebedev, is of great importance in securing the Soviet Union's economic independence. Eighty per cent of all rubber required in the U.S.S.R. for any purpose whatever is now produced artificially in Soviet plants.

In tsarist days the country's chief rubber product was rubber

footwear. Today the domestic production of rubber goods includes many other items, such as transmission and conveyor belts, hose and tyres. In 1938, 2.3 times as much rubber footwear was produced as in 1913. As the demand for rubber goods for industry as well as for the general consumer is rapidly growing, provision has been made to enlarge the raw materials supply base and build the necessary additional works. Thus the third Five-Year Plan contemplates the construction of 13—15 additional synthetic rubber works.

Soviet engineers are tireless in their efforts to devise and master new, improved technological processes. In determining what method of mechanization is to be applied to any particular plant, quantity and quality of output are not the only consideration. Every endeavour must be made to render working conditions as favourable as possible for the workers concerned. Thus, Soviet engineering talent is diligently applying itself to the problem of replacing pneumatic pick hammers and perforators by electric hammers and perforators, of introducing combines in working steep-gradient coal seams, so as to do away with blasting operations and cave-ins.

The campaign being waged in the U.S.S.R. for the thrifty and complete utilization of raw materials, for prevention of fuel, heat and electric power losses and the elimination of all waste of human energy is bound to yield great economies in view of the tremendous size of the country, and these economies in turn will ensure an extra increase in output, which implies increasing welfare for the people.

The rapid progress made by heavy industry in the U.S.S.R. has astonished the world. It is the result of the immense superiority of the Soviet Socialist system over the capitalist system. And this superiority has been made secure by the Stalin Constitution, which inspires the workers of Soviet heavy industry to strive for new victories and for the accomplishment of the stupendous tasks assigned in the Third Five-Year Plan.

LIGHT INDUSTRIES OF THE U.S.S.R.

By D. Khazan

ORDER OF LENIN. ASSISTANT PEOPLE'S COMMISSAR OF THE TEXTILE
INDUSTRY OF THE U.S.S.R.

SOVIET light industry—the industries producing consumers' goods—may be regarded as including nine major branches: cotton, linen, woollens, silk, knit-goods, leather and footwear, fur, glass and clothing. All these industries were in the charge of the People's Commissariat of Light Industry until January, 1939, when a special People's Commissariat was formed to direct the textile industry. These two commissariats control only the large, machine equipped enterprises, the rest being locally-controlled.

The successful building of a modern heavy industry—the industries, that is, which manufacture means of production—and the collectivization of agriculture have made it possible to reorganize light industry on up-to-date technical lines. Thus, in the two years 1936 and 1937 the textile industry was supplied with over 650,000,000 rubles' worth of new machinery, all of which was made in the Soviet Union.

Huge sums have been invested in building new factories in the light industries and reconstructing existing ones: 1,347,000,000 rubles during the First Five-Year Plan period and 5,618,000,000 rubles during the Second Five-Year Plan period.

The guiding principle in capital development in the Soviet light industries is to bring the manufacturing plants in closer proximity to the sources of raw material and to the consuming districts—particularly to the smaller national regions of the U.S.S.R.

In tsarist times no industries existed in the border regions of

Russia inhabited by the non-Russian nationalities, the government deliberately treating them as nothing more than sources of raw material—as colonies intended to supply Russia proper with cereals, cotton and wool. Heavy industry was confined to the central districts of the country and to one or two other districts, such as the Donetz Basin and the Urals. The light industries—particularly textiles—were also limited to a few central provinces.

The Soviet Government, in pursuance of its policy of creating real equality for all the nations and nationalities comprised by the U.S.S.R., has provided for the rapid industrialization of the border regions. Nowadays the national republics not only produce cereals and cotton; they also have heavy and light industries.

During the period of the two Five-Year Plans important new textile districts have been created in Central Asia, Siberia and Transcaucasia. A huge textile mill has been built in Tashkent, a mixed woollen mill in Barnaul, a large shoe factory in Novosibirsk and a number of glass works in Byelorussia and the Donetz Basin. Large textile mills have been built in Leninakan, Tbilisi, Kirovobad, Ferghana and elsewhere, and others are in course of construction.

Soviet light industry is striding rapidly ahead. Its gross output (calculated in 1926-27 prices) rose from 3,235,000,000 rubles in 1913 to 18,152,000,000 rubles in 1937—an increase of over 460 per cent. The number of workers employed in the light industries grew in the same period from 794,900 to 1,887,000. Among the new workers, engineers and technicians there are tens of thousands of men and women belonging to the non-Russian nationalities of the U.S.S.R. to whom machine industry was practically unknown in tsarist days.

Labour productivity is steadily rising. Whereas in 1913 the value of the average output per worker in light industry was 4,070 rubles, in 1937 it was 9,690 rubles, this increase of over 130 per cent being achieved even though the working day has been reduced from ten or eleven hours in tsarist times to seven hours today.

Cotton is the oldest and biggest of the light industries. In 1913 the total output of all the cotton mills in the country was 2,410,000,000 yds.; by 1938 it had risen to 3,787,000,000 yds. The cotton industry employs 583,200 workers, 67 per cent of whom are women.

The linen industry increased its output from 130,000,000 yds. in 1913 to 295,000,000 yds. in 1938.

In 1913 tsarist Russia produced 8,300,000 pairs of factory-made shoes; the output in the Soviet Union in 1938 was 189,500,000 pairs, or nearly 23 times as much. In 1938, three of the largest Soviet shoe factories—the Skorokhod Factory in Leningrad, the Paris Commune Factory in Moscow and the Mikoyan Factory in Rostov-on-Don—alone produced 39,400,000 pairs, or nearly five times the total output of all the shoe factories in tsarist Russia in 1913.

The output of factory-made knit-goods and of clothing has also increased immensely.

A big industry has been built up for the primary treatment of hemp and flax. The production of cottonine and rayon has also made immense strides.

The output of leather substitutes has increased more than eighteen times during the last seven years (1931 to 1938). Natural rubber as a leather substitute is now entirely replaced by synthetic rubber. The Soviet Union formerly had no home supply of natural rubber, but it has made up this deficiency by building a big synthetic rubber industry, thus ensuring itself a sufficient supply of this important product. In addition, the cultivation of rubber-bearing plants is being developed on an extensive scale.

The rapid expansion of the sources of raw material for the light industries is strikingly shown in the case of cotton growing. In tsarist times cotton was grown only in the Central Asiatic part of Russia. Now it has been introduced in Kazakhstan, Transcaucasia, the Ukraine and other southern districts, including some parts of the R.S.F.S.R.—for instance, the Krasnodar Territory, the

Crimean Republic, the Daghestan Republic, and the Stalingrad Region. The gross cotton crop in the U.S.S.R. in 1938 was 2,690,000 tons, as against 740,000 tons in 1913. In the U.S.S.R. cotton is cultivated farther north than in any other country, the plantations reaching the 48th parallel. The Soviet textile industry is no longer dependent on imported raw material and uses exclusively home-grown cotton.

No middlemen stand between the cotton-growers, organized in their collective farms, and the industry, which is state owned: the crop is sold directly to the government.

Hundreds of cotton-growing collective farms each had an income of over a million rubles in 1938. In the Izbakent District, Uzbekistan, alone there are fifty of these millionaire collective farms; between them they earned 83,500,000 rubles with their cotton crop, of which 40,000,000 rubles consisted of government bonuses for deliveries over and above the plan and for extra grade cotton. Fifty cotton-growing collective farms in the Andizhan District, Uzbekistan, also netted incomes of over a million rubles each as did forty collective farms in Armenia. Notable is the Stalin Collective Farm in the Yangi-Kurgan District, Uzbekistan, which delivered 1.62 tons of Egyptian cotton from every acre of its plantation, receiving over 3,000,000 rubles in bonuses alone.

In the Voroshilov Collective Farm (Kasum-Izmailovo District, Azerbaijan), two teams, headed by Kurbanova and Nerimova, obtained a crop of 6.1 tons of cotton from every acre of land. Agja Alieva, a team leader in the Dimitrov Collective Farm, Kirovobad District, and a member of the Supreme Soviet of the Azerbaijan Republic picked 42.6 tons of cotton from an area of 7.4 acres. Her year's earnings were 10,000 rubles in cash, in addition to produce.

The technical re-equipment of the Soviet factories demanded workers of higher knowledge and qualifications. The Soviet Government established a minimum of technical knowledge required of all workers, varying with the different professions and

trades, and set up an extensive system of educational and training courses to impart this knowledge and professional skill. In 1937, 188,500 people employed in the light industries attended spare-time technical minimum courses conducted at the expense of the state, and in that year 301,000 workers passed the state technical examinations in their various trades and professions. In addition, the factories offer their workers extensive facilities for a higher technical training—schools for foremen, assistant foremen and Stakhanovites.

In tsarist Russia there were very few engineers in factories that now come under the category of light industries. Women engineers were entirely unknown. Today the situation is totally different. In 1937, four branches of light industry alone—cotton, linen, leather and shoe, and furs—employed 35,300 engineers, of whom 7,700 were women.

In 1937, in the cotton textile industry of the Ivanovo Region, two women were in charge of trusts, three were directors and twelve assistant directors of large mills, 12 were shop superintendents, 53 engineers, 193 junior engineers, and 110 forewomen. Most of these women had been ordinary workers and had been promoted as shock-workers and Stakhanovites.

The spread of the Stakhanov movement has led to a big increase in labour productivity. In the light industries this movement was initiated by two girls, weavers in the Nogin Mill in Vichuga—Evdokia Vinogradova and her namesake, Maria Vinogradova. These girls, having made a thorough study of the technical side of their jobs, were the first in the Soviet Union to operate 100 automatic looms at a time. A little later they each began to operate 140 looms, then 216, and in 1938 as many as 285 looms.

After the Vinogradovas had made their record, the Stakhanov movement spread far and wide in the light industries, where hundreds of men and women have been granted distinctions by the government for their Stakhanovite work. The Soviet people have

shown their regard and esteem for their outstanding workers by electing many of them members of their highest legislative bodies. Evdokia Vinogradova is a member of the Supreme Soviet of the U.S.S.R. and Maria Vinogradova of the Supreme Soviet of the R.S.F.S.R. Claudia Sakharova, a Stakhanovite weaver is the youngest member of the Supreme Soviet of the U.S.S.R. She was only nineteen at the time of her election, and was assistant director of a mill with over 11,000 employees.

Another member of the supreme legislature of the U.S.S.R. is a weaver by the name of Gonoboleva, a woman of fifty, who before the revolution was semi-literate. In 1936-37 she became an outstanding Stakhanovite by establishing a new record in labour productivity, operating 30 non-automatic looms simultaneously. Gonoboleva is now director of the Kirov Mill, Ivanovo.

Maijura Abdurakhmanova is an Uzbek. She is only twenty. She saw a machine for the first time in her life in 1934, at the training school of the Stalin Textile Mills, then in course of construction in Tashkent. In 1935 she began work as a spinner. Within a month she was already operating two ring spinning machines at a time, a month later three, then four, and finally five. She has been elected to the Supreme Soviet of the U.S.S.R. and is now studying at the Industrial Academy, training to become a mill manager.

The initiators of the Stakhanov movement in the shoe industry were Smetanin, a worker in the Skorokhod Factory, Leningrad; Yashin, a worker in the Paris Commune Factory, Moscow; and Gomulko, a worker in a Kiev shoe factory.

Nikolai Smetanin, who not so long ago was a lasting machine operator in the Skorokhod Factory, having made a thorough study of his machine, began to last 2,200 pairs of shoes in his 7-hour shift, which was over three times the standard rate of 700 pairs per shift. Smetanin showed his ability not only in his trade, but also as an organizer and manager of production. He was soon appointed assistant director and then director of the Skorokhod Factory—

the largest shoe factory in the country, which produces as much as 85,000 pairs daily. Now he is Assistant People's Commissar of Light Industry of the U.S.S.R., and is also a member of the Supreme Soviet of the U.S.S.R.¹

In 1938 the volume of state, co-operative and collective farm retail trade reached 162,973,500,000 rubles, as against 61,289,200,000 rubles in 1933. The sales of high-grade goods have increased considerably. The sales of cotton fabrics by the state and co-operative stores amounted to 5,500,000,000 rubles in 1937, as against 2,100,000,000 rubles in 1929—a 160 per cent increase; clothing sales totalled 6,600,000,000 rubles—a 90 per cent increase; knit-goods sales totalled 2,300,000,000 rubles—a 130 per cent increase; and sales of footwear, 4,100,000,000 rubles, an increase of 170 per cent.

This increase in the volume of trade is to be attributed to the rising standard of living of the population.

In the U.S.S.R. unemployment has been totally eliminated. The average number of employed persons per family has sharply increased, which means a corresponding increase in the average family income. At the same time the average wages of workers in the cotton industry increased, between 1928 and 1938, by 309 per cent, in the linen industry by 373 per cent, in the wool industry by 260 per cent, in the silk industry by 261 per cent, in the knit-goods industry by 207 per cent, in the leather and shoe industry by 200 per cent, and in the glassware industry by 288 per cent. The average monthly earnings of many shock workers and Stakhanovites are as much as 1,000 rubles and over.

To the real earnings of Soviet workers must be added the state expenditure for the education of their children, for the workers' recreation and vacations, for cultural services, medical services, security in old age, and so on. These services rendered by the state free of charge amount on the average to about 22 per cent of the income of the worker's family.

¹ The article on *Who Directs Soviet Industry* in this volume is contributed by Smetanin.

Mention should also be made of the social insurance funds, which are controlled by the trade unions. In 1938 insurance benefits paid by the Moscow and Leningrad Cotton Workers' Union amounted to 108,600,000 rubles. Of this sum 34,500,000 rubles were spent on payment of sick benefits; 28,300,000 rubles were paid to women employees in maternity benefits and 4,350,000 rubles for the acquisition of layettes and as nursing grants; 3,150,000 rubles were spent on extra-school services for workers' children, 2,500,000 rubles on grants to parents, 5,850,000 rubles on the construction and upkeep of Young Pioneer camps and children's sanatoria, 2,450,000 rubles on dietetic feeding, 10,440,000 rubles on rest homes, sanatoria and health resorts, 1,080,000 rubles on facilities for sports, mountain climbing, etc., and 5,300,000 rubles on invalid pensions.

In tsarist times the Russian peasants, because of their poverty, bought very little manufactured goods. Their clothes and linen were home spun on primitive looms and home made. Leather shoes were considered a luxury; most of the peasants wore bast shoes, wrapping their legs in strips of coarse linen kept in place by string. Socks and stockings were practically unknown in the Russian village.

Nowadays the peasants have become collective farmers, and the majority of them dress in the town fashion. The younger people even dress smartly; country girls are buying good shoes, stockings and stylish dresses.

The rising standard of living of the people of the U.S.S.R. is creating a growing demand for manufactured goods, and, in spite of the big increase in the production of fabrics, footwear and knit-goods, the output does not yet cover the demand.

Under the Third Five-Year Plan, the output of various consumers' goods is to be increased 50 to 100 per cent. The year 1942 will see an output of 5,341,000,000 yds. of cotton fabrics (42 per cent more than in 1937), and 235,000,000 pairs of leather shoes (43 per cent more than in 1937). The output of woollen cloth will be

67 per cent more than in 1937.

There will be a big increase in the output of textile machinery. The mills will be equipped with the most up-to-date machinery, including continuous process machines, automatic looms, etc.

Further progress is envisaged in the Third Five-Year Plan with respect to bringing the light industries closer to the sources of raw material and fuel. A number of new textile mills will be started, including cotton mills in Barnaul, Novosibirsk and the Kuznetsk Basin, a spinning mill in Leninakan, the second section of the Tashkent Textile Mills, and cloth mills in Kiev and Semipalatinsk. A number of textile mills will be erected in Western Siberia and the Kazakh Republic. Numbers of knit-goods and hosiery factories, silk mills, flax mills, tanneries and shoe factories will also be built throughout the country.

The Third Five-Year Plan will bring about a further rise in the standard of living of the people of the U.S.S.R. by more fully meeting the demand for all kinds of goods and produce and for wider material and cultural services.

INDUSTRIAL PROGRESS IN THE SOVIET REPUBLICS OF THE NON-RUSSIAN NATIONALITIES

By M. Papyan

VICE-PRESIDENT OF THE PRESIDIUM OF THE SUPREME SOVIET OF THE
U.S.S.R. CHAIRMAN OF THE SUPREME SOVIET OF THE ARMENIAN SOVIET
SOCIALIST REPUBLIC

MORE than three-quarters of the entire industry of tsarist Russia was concentrated in its central provinces, in the Ukraine and in the Baku oil district.

The non-Russian borderlands of the empire were looked upon by Russian and foreign capitalists alike as nothing more than sources of raw material and markets for the sale of manufactured goods.

When it came into power, the Soviet Government abolished the regime of national oppression and established the equality of all nationalities. To give effect to this national policy, it had to put an end, in the shortest possible time, to the economic and cultural backwardness of the nationalities formerly oppressed by tsarism.

Accordingly, the Communist Party and the Soviet Government designed and enacted a series of measures which enabled the districts inhabited by the backward nationalities to overtake the more developed central regions of Russia.¹

Many industrialization measures were included. During the first two Five-Year Plan periods (1928-37) the former "borderlands" of the country witnessed the construction of numerous industrial establishments and the growth of large forces of workers and pro-

¹ The most comprehensive and authoritative study of the Communist approach to these problems is to be found in *Marxism and the National and Colonial Question*, by Joseph Stalin. (Lawrence & Wishart, Ltd., 3/6 net.)

professional people of native stock. Without all this, national equality would be but a sham, an empty, meaningless phrase.

The republics of the non-Russian nationalities comprised in the U.S.S.R. have fundamentally reorganized their national economy and have attained gigantic industrial expansion. From agrarian adjuncts serving as raw material bases for the industries of Russia proper, they have been turned into mighty centres of Socialist industry. Vital centres of the iron and steel, coal, oil, machine-building and electric power industries have sprung up in the Soviet East.

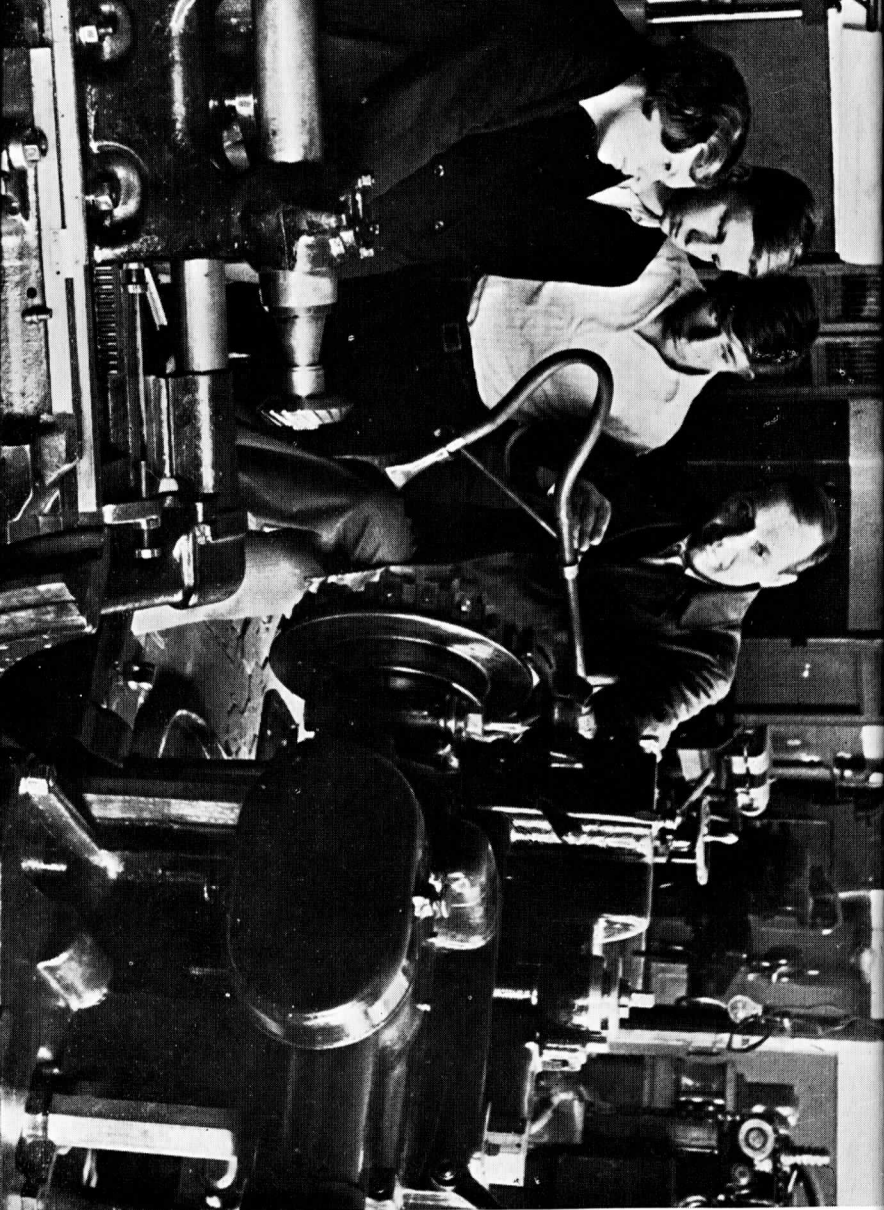
There is no republic or region of a non-Russian nationality in the U.S.S.R. that has not founded its own industry during the last ten years. This is equally true of both the large and the small republics and regions.

Let us, for example, consider the Bashkirian Autonomous Soviet Socialist Republic, whose dimensions are relatively small. The funds invested in the national economy of Bashkiria in 1932 alone equalled the total sum invested in this region by tsarist Russia in half a century. During the Second Five-Year Plan period (1933-37) capital investments in the national economy of this republic exceeded 1,000,000,000 rubles. Bashkiria, which before the Revolution had practically no industrial enterprises at all, has now built up scores of new factories, including the well-known Ufa Motor Works and an oil cracking plant. The Beloretsk and Baimak Works have been totally reconstructed and transformed into modern enterprises. This republic has also been found to contain oil, and the Ishimbai and Tuimazy oil fields are already being successfully operated.

Let us now turn to another republic—Kazakhstan—one of the eleven constituent republics of the Soviet Union. This is a vast country, occupying a territory of 1,060,000 sq. miles, and is exceedingly rich in valuable minerals. It includes the huge Emba oil fields, second in size to the Baku fields. Its copper deposits con-



I. GUDOV. MILL-
ING MACHINE
OPERATOR
Author of the Arti-
cle on Work & Wages



LEARNING TO
BE SKILLED
ENGINEERS

stitute 60 per cent, and nickel deposits 50 per cent of the total known deposits in the U.S.S.R. Kazakhstan also has huge coal deposits. Recent prospecting revealed immense phosphorite deposits and new chromite beds. They are among the richest in the world. The metal content of the Altai gold, silver, zinc and copper ores is of the highest.

Yet, until the Revolution, all these riches lay buried in the ground untouched. Kazakhstan was a backward region whose nomad population engaged almost exclusively in rather primitive cattle breeding. Meat and leather were the sole products they provided for Russia's central regions. There were no industrial enterprises of any account, no railroads and no telegraph or telephone service.

Today the Kazakh Soviet Socialist Republic represents a land of new constructions. A large coal industry has been created here with Karaganda as its centre. Numerous oil fields are being exploited, the erection of the gigantic Balkhash copper smelting works has been completed, the Ridder Lead Works has been entirely reconstructed, and a huge lead factory, the giant of the Soviet Union's lead industry, has been erected at Chimkent, while several new chemical and other works have been added to the republic's industrial plant.

The tempestuous rate of development of the republic's industries may be judged by the fact that during the years of the Second Five-Year Plan lead smelting in Kazakhstan increased twelve-fold and in 1937 constituted 75.3 per cent of the total lead smelted in the Soviet Union, as against 30.2 per cent in 1932.

A roadless country in the past, Kazakhstan under Soviet rule has been covered with a whole network of overland communication lines, including numerous railroads whose mileage totals 4,160 miles, while 3,700 miles of waterways have been made available for navigation.

Bordering on Kazakhstan is Uzbekistan, one of the Soviet

Socialist Republics situated in Central Asia. In the past, this republic, like all the other borderlands inhabited by non-Russian peoples, was a tsarist colony. It supplied the central regions of the empire with cotton, which the tsarist authorities did not allow to be woven or even spun in the regions which produced it. Today, Uzbekistan has a number of big textile mills. Special mention must be made of the huge plant in Tashkent, the republic's capital, which is equipped with 112,000 spindles and 3,246 looms. A second section of this plant is now under construction, upon completion of which the plant will have in operation 211,000 spindles and 6,952 looms. Many electric power stations, plants manufacturing agricultural machinery and implements, silk reeling mills, clothing factories and other industrial establishments have also been built in Uzbekistan. Not far from Tashkent, on the banks of the Chirchik River, a combined plant producing electricity and chemical products is now under construction. It consists of a hydro-electric power station with a capacity of 270,000 kilowatts, which will supply cheap energy to the industrial establishments of Tashkent, and of a fertilizer factory whose products will go to enrich the republic's cotton fields.

The industrial development of Uzbekistan has led to a considerable increase in the number of the republic's native workers and professionals. Over 100,000 people are now employed in its large-scale industries and on construction. More than half of these are skilled and semi-skilled Uzbek workers. An Uzbek technical intelligentsia—technicians and engineers—has also come into existence.

Similar records of achievements may be exhibited by the other non-Russian nationalities of the U.S.S.R. Industry is rapidly expanding not only in those republics which formerly were agrarian colonies pure and simple, but also in Azerbaijan and the Ukraine, which even before the Revolution had quite a few industrial establishments.

In Azerbaijan, the old Baku oil industry, dating back to pre-revolutionary days, has been entirely reorganized. As a result, the annual oil yield has increased 3 times in comparison with 1913, the gas yield 69 times and the production of gasoline 48 times. In recent years a number of new oil fields have been prospected and are now extensively exploited. In 1938 the new fields and the new wells on the old fields accounted for 83 per cent of the total oil output.

The Donetz coal basin, the chief purveyor of coal for the whole country before the Revolution, is located in the Ukraine. Now, with the development of the Kuznetsk coal fields in Siberia, the Karaganda coal fields in Kazakhstan and local coal fields in Central Asia, Georgia, the Far East and in other districts, the Donetz basin's proportionate share in the Soviet Union's output of coal has, naturally, diminished. However, as far as absolute figures go, the mining of coal in the Donetz basin is increasing from year to year and has more than tripled in comparison with pre-war times. Today, the Ukrainian Soviet Socialist Republic produces twice as much coal as all of Poland.

The Ukraine also had an iron and steel industry before the Revolution. This, too, has been thoroughly reconstructed during the years of the Soviet rule. In place of the old blast and open-hearth furnaces and of the old rolling mills, new, thoroughly modernized equipment has been installed.

Many first-class new works, such as the Zaporozhye Steel Mill, the Azov Steel Mill, the Krivoi Rog plant and others, have been erected. During the years of the Second Five-Year Plan alone (1933-37), the Ukraine's output of pig iron was more than doubled. One plant—the Kirov iron and steel mill in Makeyevka—produces twice as much pig iron as all the iron and steel mills in Poland put together. During this same period the production of steel in the Ukraine almost tripled. Ukrainian mills produce as much steel annually as Japan, Italy and Poland put together. In com-

parison with 1913, the machine-building industry in the Ukraine has grown thirty-fold and the generation of electric power 18.5-fold. The Lenin Hydro-Electric Power Station on the Dnieper, built under Soviet rule, alone supplies more electric power than did all the power houses of tsarist Russia in the aggregate.

The author of these lines is an Armenian, and it is therefore only natural that he should want to illustrate the industrial expansion in the republics of the non-Russian nationalities by the example of Armenia.

Until 1914 the industry of Armenia, in the main an agrarian country, was extremely backward and even primitive. Its few factories were hardly more than handicraft shops.

Most developed at that time were the copper industry, the production of alcoholic beverages, and cotton ginning by handicraft methods.

The inexhaustible natural resources of this mountainous country, with its rivers and lakes and its colossal reserves of valuable minerals, were practically unexploited.

All the electric power in Armenia used to be supplied by two hydro-electric power stations with a total capacity of 250 kilowatts.

During the World War (1914-18) and the years in which the Armenian counter-revolutionary Party of the Dashnaks was in power (1918-20), Armenia's weak industry was altogether ruined.

Only Soviet rule, established in Armenia on November 29, 1920, put an end to its economic prostration. The initial period of economic revival has been followed by the Socialist industrialization of its national economy.

A number of hydro-electric power stations, with an aggregate annual output of 350,000,000 kilowatt-hours, have been built. All these power houses are linked up into a single chain, which makes it possible to regulate the flow of electric power.

Extensive work is now under way to utilize the abundant waters of the huge Sevan Lake, situated high in the mountains, for which

purpose a number of hydro-electric power stations are being erected on the cascade system along the Zanga River.

When construction of the cascade is completed, leaving the lake and its innumerable fisheries intact, Armenia will annually be supplied with more than 3,000,000,000 kilowatt-hours of cheap electric power.

At the same time the water discharged by the turbines will go to irrigate more than 321,000 acres of fertile soil.

Construction of power plants has made possible the extensive development of industry. New branches of industry have been launched, and the old branches have been fundamentally reconstructed. Armenia's copper industry has made big strides. At present the annual output of the Alaverd and Kafan copper smelting works amounts to 10,000 tons.

The republic also has large chemical works. In Erevan, the capital of Armenia, a huge synthetic rubber works has been erected. Some time ago a new cement factory, producing 114,000 tons of high-quality material annually, sprang up on the Davalin sands, at the foot of a long range of mountains rich in limestone.

A machine-building plant manufacturing engines and compressors is another addition to the Republic's industries.

A new tobacco factory manufactures 1,700,000,000 cigarettes a year. Armenia's canneries yearly put out 20,000,000 cans of preserved fruits and vegetables. The output of wine presses and distilleries, meat packing plants and other establishments of the food industry has also increased to a marked extent.

Two cotton ginneries have been built to deal with the rich cotton crops. Their capacity is 22,000 tons of cotton annually.

A huge textile plant, with large new spinning and weaving mills, forms the nucleus of a regular little town of its own within the city of Leninakan. This plant has 117,000 spindles and produces 33,000,000 yards of textiles a year.

The leather and shoe industry has also undergone considerable

development.

Erevan, which only recently used to amaze the foreign tourist by its winding, typically Asiatic streets and clay hovels, has been transformed into a beautiful, well-planned city really deserving of being a capital.

Under capitalist conditions nations required whole centuries to attain to modern modes of production.

With the impetus given them by the October Socialist Revolution, our formerly backward nations needed little more than a decade to develop into flourishing Socialist republics, where exploitation of man by man and national oppression have been wiped out once and for all, where advanced Socialist industry and large-scale Socialist agriculture hold undivided sway.

WORK AND WAGES IN THE SOVIET UNION

By I Gudov

ORDER OF LENIN. MEMBER OF THE SUPREME SOVIET OF THE U.S.S.R.
METAL WORKER

UNEMPLOYMENT is unknown in the Soviet Union. The number of employed persons is increasing from year to year.

There are today twenty-eight million workers by hand and brain in the U.S.S.R., or two and a half times as many as there were in Russia in tsarist times.

All these people are employed by the state. How are they faring? The Great October Socialist Revolution brought them not only freedom, but tangible material benefits as well. With the growing wealth of the country, the well-being of the working population is steadily rising.

In the U.S.S.R. the whole national income belongs to the people and is used for the benefit of the people. In tsarist Russia three-quarters of the national income passed into the pockets of the tsar, the landlords and the capitalists.

But there has been a change not only in the distribution but also in the size of the national income; the national income of the U.S.S.R. in 1938 was five times as large as the national income of tsarist Russia in 1913.

In the U.S.S.R. the principle of Socialism is applied: from each according to his ability, to each according to the labour he performs. The Soviet people—the workers, peasants and intellectuals—work for themselves, for their own benefit, and they therefore strive to give their best efforts to the state. This national endeavour coincides with the personal interest of the citizen, for he is remuner-

ated in accordance with the amount and quality of the work he performs.

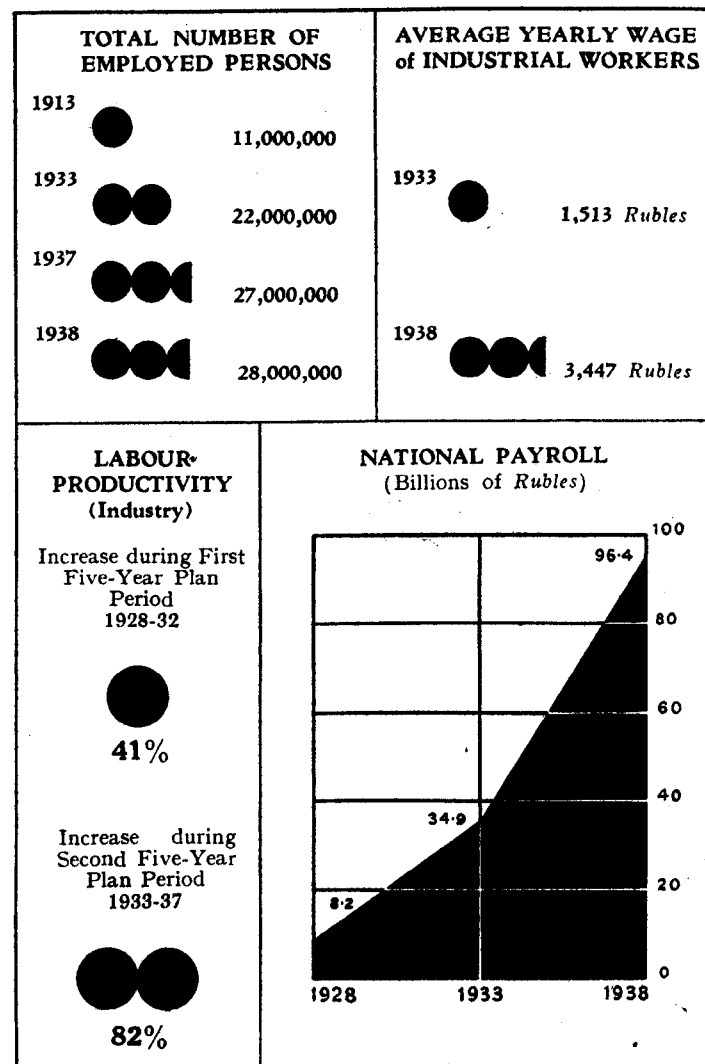
If, in addition to this, we bear in mind that a technical revolution has taken place in Soviet economic life, that as regards the degree of saturation of industry and agriculture with modern machinery the Soviet Union is more advanced than any other country in the world, and that millions of people have learnt to master the new machine technique, the rapid rise of productivity of labour in the U.S.S.R. will be understood.

Here are a few figures in illustration: during the period of the First Five-Year Plan (1928-32), productivity of labour in industry increased 41 per cent; in the period of the Second Five-Year Plan (1933-37), it increased 82 per cent (as against 63 per cent envisaged by the plan) in large-scale industry, and by 83 per cent (as against 75 per cent envisaged by the plan) in the building industry. Productivity of labour in heavy industry in the first half of 1938 increased by a further 15.5 per cent compared with the corresponding period of 1937.

Productivity of labour is increasing at a faster rate in the Soviet Union than in any other country in the world. By the end of the period of the Second Five-Year Plan it was already higher than in Great Britain, and is close to being the highest in Europe, although still lower than in the U.S.A.

One of the most important aims envisaged in the Third Five-Year Plan (1938-42) is a further rise of productivity of labour by 65 per cent in the manufacturing industries, and by 75 per cent in the building industry.

Numerous cases may be cited of individual Stakhanovites and whole groups of Stakhanovites who have broken world records in productivity of labour, and who are surpassing the old, supposedly maximum standards of output of machinery. They are thereby solving the problem of the all-round mechanization of labour. They are discovering new methods of production. They are creating



a Socialist culture in industry.

In addition to being highly productive, the work of the Stakhanovites is also of high quality. And one of the most important features of this movement is that Stakhanovites not only show a high productivity of labour, but, having mastered up-to-date machine technique, are proving themselves to be organizers of production, initiators of perfected methods and processes. This is but an illustration of the fact that the workers of the Soviet Union are attaining to the cultural and technical level of engineers and technicians.

My own case is an example. I am a metal worker. Operating a German milling machine, I attained an output over fourteen times the established German standard for that machine. How? Instead of operating one cutting tool and milling one part at a time, I fitted the machine with two cutting tools and began to work two parts simultaneously. Then I increased the number of tools and the number of parts worked correspondingly. Hence the result. But in order to achieve this result I had to perform work in adapting the machine which rightly comes within the province of a designing engineer.

Or take the case of Zamkov. He operated a German bending machine which is calculated to bend iron rods at the rate of 4,585 lbs. per shift. He decided to make some improvements to the machine: he attached a fast motor to it, fitted a contrivance of rollers to feed and guide the rods, and exchanged the hand control for a foot control. He also rearranged the work of his helpers. As a result, he first exceeded the German standard of output per shift ten times, and then twenty-five times. As we see, in order to multiply the German standards of output in this way, Stakhanovite Zamkov had to make constructive improvements which are usually regarded as coming within the field of the designing engineer.

But let us return to our figures. It should be borne in mind that every rise in productivity of labour in the U.S.S.R. by one per

cent implies a rise in the total annual output of the country's industry and, what is more, that this rise itself increases from year to year. Thus every rise in productivity of labour by one per cent in the period of the First Five-Year Plan meant an increase of total industrial output by roughly 250,000,000 rubles, and in the period of the Second Five-Year Plan by over 430,000,000 rubles. In the period of the Third Five-Year Plan every one per cent increase in productivity of labour will increase the total output of manufactured goods by over 950,000,000 rubles.

During the last five years industrial output in the Soviet Union increased by 139 per cent, a rate of industrial progress unknown to any other country in the world. Compared with pre-war times, industrial output in 1938 had increased by over nine times in the U.S.S.R., whereas in the major capitalist countries (U.S.A., Great Britain, Germany and France) it had either remained at the level of 1913 or else exceeded it by only 20 or 30 per cent.

The rising productivity of labour, the growing output of industry, the progress of the national economy as a whole and the accompanying increase in the national income, all lead to a steady improvement in the material and cultural standards of the Soviet people.

Wages are rising from year to year. The national payroll has increased nearly twelve times in the past ten years: in 1928 it amounted to 8,200,000,000 rubles, in 1933 to 34,900,000,000 rubles, and in 1938 to 96,400,000,000 rubles.¹ The average annual earnings of the industrial worker rose from 1,513 rubles in 1933 to 3,447 rubles in 1938.

But the standard of living of the Soviet manual and intellectual worker is measured not only by the steady increase in the national payroll, but also by the rise in real wages.

This was pointed out by V. Molotov, the head of the Soviet

¹ These figures are brought up to date in the extracts from Voznesensky's report (1941) quoted in the *Publisher's Note* at the beginning of this volume.

Government, at the Eighteenth Congress of the Communist Party of the Soviet Union, when, referring to the considerable improvement in the material and cultural standard of the working people and to the increased national consumption in the period of the Second Five-Year Plan (1933-37), he said: "While there was an 18 per cent increase in the number of workers and employees, the national payroll showed a 2½-fold increase, or a rise of 151 per cent, as against 55 per cent specified in the Second Five-Year Plan. Real wages of workers doubled during the Second Five-Year Plan (a 101 per cent increase)."

One indication of the rise in the standard of living is the big expansion of retail trade. During the period of the Second Five-Year Plan the sales of the state and co-operative trading system increased more than two and a half times. This is due both to the growing food resources of the country and to the tremendous increase in the output of consumers' goods.

It is a characteristic fact that in the period 1935-37 the consumption of black (rye) bread considerably declined, whereas the consumption of white (wheat) bread increased 2½ times. Even greater was the increase in the per capita consumption of meat and meat products. The per capita consumption of eggs and fruit doubled during this period, and the per capita consumption of butter more than doubled.

In 1938 the output of the food industry of the U.S.S.R. was nearly six times as large as the output of the food industry in Russia in 1913. These food products now almost entirely remain within the country to be consumed by the population.

The increase in the output of industrial goods may be illustrated by the fact that 8,300,000 pairs of boots and shoes were turned out by the factories of Russia in 1913, while 189,500,000 pairs were turned out by the Soviet factories in 1938. The increase is even more striking in the case of the garment industry, whose output, valued at 1926-27 prices, increased from 13,500,000 rubles in 1913

to 1,699,000,000 rubles in 1938.

There is a steady increase in the demand for the higher grades of goods at the expense of the lower grades. In particular, there is a growing demand for good furniture and other domestic articles.

But in spite of this great increase in the output of consumers' goods, we find that owing to the rising standard of living and the increasing purchasing power of the working population, the demand grows faster than the supply, and it is still not fully satisfied.

To get a correct idea of the standard of living of the workers, it should be borne in mind that there is scarcely a family where there are not two, three or more working members who contribute to the family income. There is a great demand for labour power in the Soviet Union, and nearly every factory or office is constantly seeking additional workers.

But the standard of living of the workers is measured not only in wages. Both the state and the trade unions provide an extensive system of free services. Compulsory insurance of workers at the expense of the state is universal. With the progress of industry, the number of employed persons increases, and so does the budget of the social insurance fund. The number of insured persons increased from 11,000,000 in 1929 to 26,700,000 in 1937. Insurance covers sickness, permanent disability, old age and death. The total expenditures of the state on social insurance amounted to over 10,000,000,000 rubles in the period of the First Five-Year Plan, and to 26,500,000,000 rubles in the first four years of the Second Five-Year Plan. It should further be borne in mind that medical service in the Soviet Union is free, and that all working people receive an annual vacation with full pay at the expense of the state. The trade unions have their rest homes and sanatoria where workers may spend their vacations. The expenditure of the trade unions under this head amounted to 900,000,000 rubles in 1936 and exceeded 1,000,000,000 rubles in 1937. In the latter

year the trade unions provided places in rest homes and sanatoria for about three million persons, or nearly 400,000 more than in the previous year.

To this should be added that education¹ in the Soviet Union—from elementary school to university—is free, that the state spends vast sums annually on cultural services for the working people, and so on.

These additional expenditures of the state, over and above the monetary earnings of the workers, represent of course an addition to real wages.

Particular care and solicitude is shown in the U.S.S.R. for the working woman. Maternity benefits granted by the state in 1937 amounted to 1,145,000,000 rubles. In addition, there are the special grants made by law to mothers of large families. The expenditure of the state in 1937 on maternity homes was 488,000,000 rubles, on lying-in centres in rural districts over 90,000,000 rubles, on dairy kitchens over 1,000,000,000 rubles, and on the building and maintenance of crèches over 1,000,000,000 rubles. Extremely favourable conditions have been created both for the welfare of the mother and for the health and upbringing of her children.

Such, in brief, is the position with regard to the work, wages and welfare of the working people of the Soviet Union.

¹ In No. 3 of this series, *Democracy in Practice*, there are articles dealing in detail with Public Health and Education.

WHO DIRECTS SOVIET INDUSTRY

By N. Smetanin

ORDER OF LENIN. ASST. PEOPLE'S COMMISSAR OF LIGHT INDUSTRY
OF THE U.S.S.R.

MEMBER OF THE SUPREME SOVIET OF THE U.S.S.R.

THE industrial development of the U.S.S.R. calls for increasing numbers of administrators with a good knowledge of the processes of production and able to direct them.

During recent years Soviet industry has grown considerably. Its aggregate output is now second only to that of America.

Many new branches of production, unknown to Russia in tsarist times, have sprung up in the last ten years; such are the chemical, aircraft, automobile, tractor and machine tool industries, to mention only a few.

How was it possible to train the necessary people to administer these thousands of new plants? Where did they come from? What manner of people are they?

The Great October Socialist Revolution abolished exploitation in the Soviet Union. The workers, peasants and labouring folk generally became the masters of all the wealth of the country. Tens of millions of people who before the revolution were unfranchised and downtrodden came to take an active and regular part in the administration of the state. Their ranks have produced many talented organizers and directors of industry, transport, and agriculture, and many gifted workers in the field of art and culture.

The administration of the country and its industry was thrown open to women, who constitute half the population and who in tsarist times were allowed no share whatever in public life. The

revolution has conferred upon women equal rights with men in law and in fact. There is no branch of government, industry or cultural effort in the Soviet Union today in which women do not take an active part.

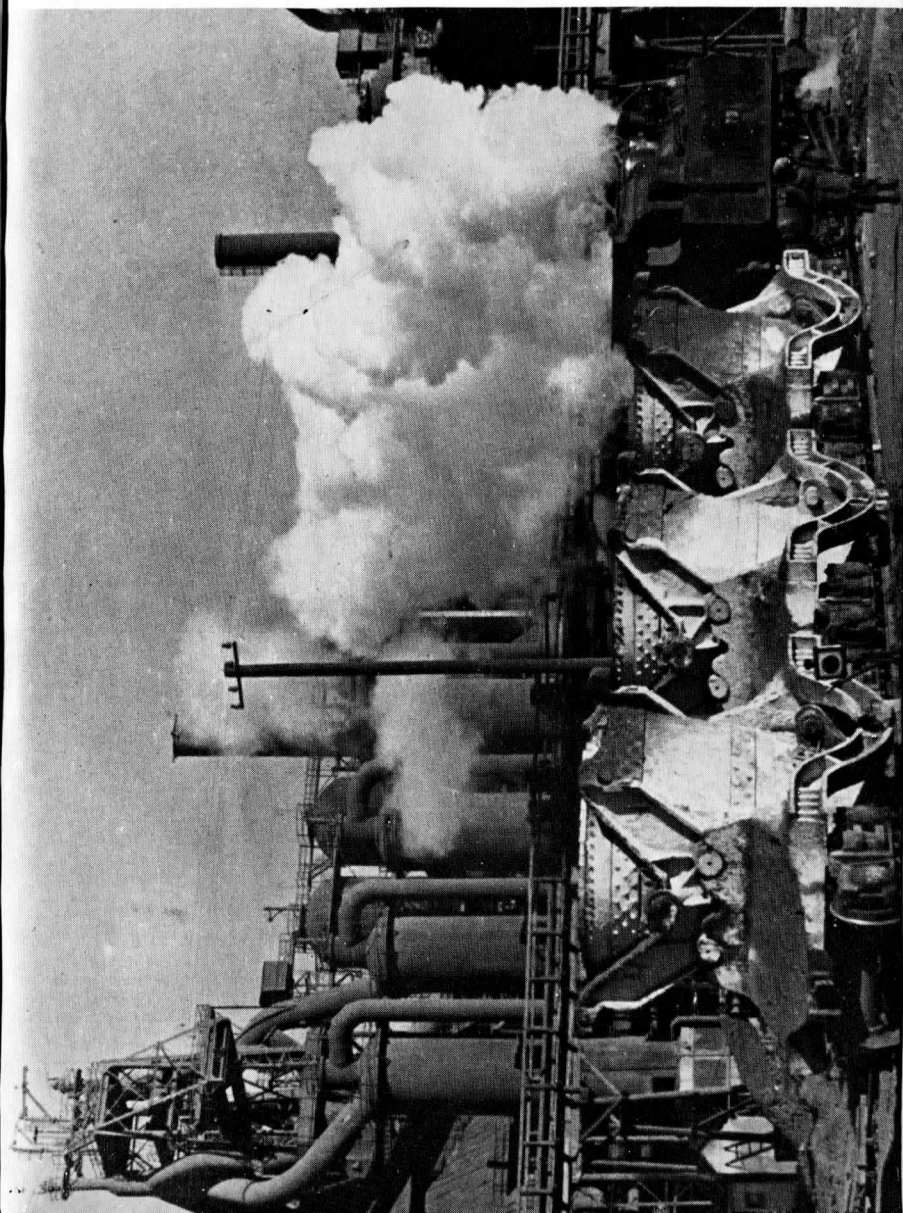
The numerous peoples of the U.S.S.R. who under the tsars languished in a state of colonial slavery have been emancipated from national oppression and, with the assistance of the Russian people, have built up their own industry and a new cultural life.¹ These peoples are also taking an active part in the work of Socialist construction, and their ranks are constantly producing talented leaders.

The vast majority of the directors of Soviet industry were once rank-and-file workers. They secured promotion owing to their abilities and the initiative they displayed in production. They are people reared in the new Socialist technique; they strive to get the very utmost out of technique and to produce the largest possible quantity of goods of the best quality for the benefit of their country.

The national income of the Soviet Union is entirely at the disposal of the working people. Part of it goes for the further economic development of the country, the remainder to satisfy the needs of the people. The richer, therefore, the U.S.S.R. grows, and the more its industry and agriculture produce, the greater becomes the well-being of its citizens and the higher their standard of living. Hence the Soviet citizen is interested in multiplying the wealth of his country, and he therefore strives to increase productivity of labour and to raise his own level of education and technical knowledge.

In this, of course, he has the assistance and encouragement of the state, which assigns vast sums to educational establishments for the training of skilled forces. Whereas 559,000,000 rubles were assigned from the budget for education in the fiscal year 1925-26,

¹ The whole subject of the "National Question" and its solution is dealt with in an article in No. 3 of this series, *Democracy in Practice*.



over 20,000,000,000 rubles, or nearly forty times as much, were assigned in 1938. About one-third of this sum was designed for the training of skilled forces.¹

Every worker in the Soviet Union has the full opportunity to acquire an education and training equal to that of a technician or engineer, to acquire the knowledge needed for the advancement of industry. This not only applies to capable individuals who succeed in securing advancement; it is being carried out on an extensive scale with the vigorous support of the Soviet state, which has set itself the aim of raising the cultural and technical level of the whole working class of the country to that of engineers and technicians.

Every factory has courses of various kinds at which any unskilled worker who wishes is taught the technical knowledge he needs.

The Skorokhod factory, for example, at which the present writer was employed for many years as an ordinary worker, has 17,000 employees, and of these about ten thousand are taking various courses of study.

Workers who desire to improve their qualifications and to obtain a better knowledge of the processes of their industry may attend the Stakhanov technical schools in the factories where they are employed. They also have the opportunity of acquiring a complete technical education. They may attend technical college in their spare time or take a university correspondence course. This enables a worker to acquire the knowledge he needs without having to throw up his work or leave the town where he resides. Nearly all the universities and special technical colleges have their correspondence departments, and the field they embrace is expanding from year to year.

There are a number of academies in the U.S.S.R. where yes-

¹ The pictorial graph on pp. 8 and 9 of this volume shows in a most striking manner the way in which the national budget was apportioned for the year 1941.

F1

S. SHATALIN
Stakhanovite Coal
Miner

terday's rank-and-file workers are trained to be directors of vast industrial plants.

By the end of 1936 two-thirds of all the workers engaged in large-scale industry had already been through, or were taking, courses in technical training.

About 350,000 young workers are being trained at the factory apprenticeship schools; 385,000 entered technical colleges in 1938 alone.

In every Soviet factory the trade union and social organizations, as well as the special personnel department, help the advancement of workers to more responsible posts. They endeavour to secure for them the most favourable conditions for study, whether at the factory itself, or at schools, courses, etc. They aid their advancement, and they show a constant interest in the people whose promotion they have furthered.

The absence of a degree or diploma is no bar to promotion. There are plenty of directors of huge industrial plants and superintendents of shops and departments who have not yet finished their education but who have displayed talent in the practical processes or in the organization of industry. Individual tutors, prominent experts and even professors are often assigned to such people to help them to acquire the necessary knowledge in the shortest possible time.

In recent years tens of thousands of Stakhanovites have been promoted to various leading posts in all branches of industry.

In heavy industry alone some five thousand have been appointed heads of trusts, factories and mines, oilfields and so on.

Izotov and Dyukanov, recently miners at the coal face, are now directors of coal trusts. Krivonoss, Ognyev and Bogdanov, former locomotive engineers, are now administering big railroads with a large freight and passenger traffic. Many such examples could be cited. The names of Stakhanovites, people with a high sense of public duty who have mastered the technique of their jobs to

perfection, are widely known all over the country. Many of them have been elected to the Supreme Soviets of the U.S.S.R. and the Union Republics. Let us mention Alexei Stakhanov himself, the initiator of the Stakhanov movement, Evdokia and Maria Vinogradova, textile workers, and A. Busygin, forgesman at the Gorky Automobile Works. These are only a few of the long list of rank-and-file workers who in a short period have developed into public figures who take an active part in affairs of state. The majority of them are studying in the industrial academies of their particular branches of production.

Some idea of the rapidity of advancement and development of new commanders of industry may be obtained from the story of my own life.

I was born the son of an oven-mason, whose earnings were very meagre. Like the majority of workers in tsarist times, my father had no opportunities for education and no chance of transferring to a more skilled and lucrative profession.

In pre-revolutionary days, the Russian government showed no interest in educating workers, and a qualified technical training was practically beyond the reach of workers' children. Many educational establishments were only open to the sons of the nobility. Education was expensive (it is free in the U.S.S.R. today), scholarships and stipends were unknown; and so it was extremely difficult for the sons of workers and peasants to get any schooling at all.

The promotion of workers to executive posts was something almost unthinkable in the factories of tsarist times. The owners preferred to invite experts from abroad for this purpose. In the Skorokhod shoe factory, for example, all the foremen and shop superintendents were Germans.

I first went to that factory in 1918, after my father died. Shortly after the revolution an apprenticeship school was opened in connection with the factory, and I joined it with the object of improv-

ing my qualifications.

After leaving this school I became a laster. This operation used to be performed by hand. After the factory was reconstructed in 1930, it raised its output from two million to twenty-two million pairs a year, and I was put on a lasting machine.

I studied the machine very thoroughly and came to the conclusion that my job could be done much faster without injury to the quality of the product. And by 1932 my output had increased very considerably.

In 1935 I read in the newspapers about the methods of work instituted by Alexei Stakhanov, a coal hewer in the Donbas, and the high productivity of labour he had attained. This gave me the idea that if we in the shoe trade were to adopt Stakhanov's methods, we too could raise our output considerably and supply the country with far more shoes than before.

I began to study my machine more carefully, to probe into all its "secrets" and potentialities, and on September 21, 1935, I established a record: I lasted 1,400 pairs of shoes in one shift, when the standard output was 680 pairs.

This was a historic day in my life. The news of my record soon became known all over the factory. I received the congratulations of the workers, who presented me with a huge bouquet of flowers. I saw sincere pleasure depicted on the faces of my workmates.

This record started a regular movement for higher productivity of labour in the shoe factories of the country. Calculation of movement and economy of seconds became the watchword among the shoe workers.

Very soon my record was beaten by other workers. I was sincerely pleased with their achievements, for it was all for the benefit of our Soviet country and helped to increase its wealth and might. I continued to strive to improve the processes of work, to raise productivity of labour, and thereby I considerably increased

my own earnings. I soon established a new record—1,820 pairs in one shift. It made me happy to know that our people were receiving more shoes than formerly thanks to my efforts and those of my comrades. The government rewarded my initiative and achievements by granting me the Order of Lenin.

Meanwhile, I was studying very persistently and improving my technical knowledge. Very soon I was appointed shop foreman, and a year later assistant director of the factory. In 1938, three hundred thousand voters of Leningrad elected me Member of the Supreme Soviet of the U.S.S.R. In May of that year I was appointed director of the Skorokhod factory, whose gates I had first entered twenty years earlier as a boy of twelve. Today I have been promoted to the highly responsible post of Assistant People's Commissar of Light Industry of the U.S.S.R.

There are numberless workers like myself in our country who in a short time have passed from the bench to the management of industry. I could mention dozens of my comrades, former rank-and-file workers in the leather and shoe trade who have become directors of factories.

Take, for example, Salamanov, a leather worker, who in his spare time studied assiduously and acquired a higher technical education. He first became an engineer and then the director of a big leather works. Another example is Zatulovsky, who was also a leather worker. He first qualified as a technician and then as an engineer. He is now the assistant chief of the Leather Industry Board of the U.S.S.R.

In a like manner people are developing in every branch of industry of the Soviet Union. These people are part of the wealth of the Soviet country. They are a pledge of the rapid growth of its might and power. They love their country profoundly and are devoted to the service of its industry. They never tire of studying and improving their proficiency in whatever post their people may promote them to. A feature that marks them all is their

persistent effort to transmit their knowledge, experience and discoveries to their comrades and to help them in their development and advancement.

The Third Five-Year-Plan of Economic Development of the U.S.S.R. (1938-42) envisages a further big advance in industrial development and in the mechanization of agriculture. This will demand large numbers of new administrators in the most varied fields. The system of training and advancement in the Soviet Union is a guarantee that this demand will be fully met.

MAGNITOGORSK

By A. Baikov

MEMBER OF THE ACADEMY OF SCIENCES OF THE U.S.S.R.

DEPUTY TO THE SUPREME SOVIET OF THE U.S.S.R.

THE URALS-KUZBAS PROBLEM

TSARIST Russia was an agrarian country with a backward industry. But even that industry was extremely unevenly distributed throughout the country. Textile mills, for instance, were built only in the central districts, far from the sources of raw material. Oil extraction was concentrated almost entirely in Baku, and coal mining in the Donetz Basin (Ukraine). The principal iron and steel plants were concentrated in southern Ukraine. This was practically the sole coal and iron and steel producing centre of tsarist Russia: it accounted for nearly 90 per cent of the coal mined in the country and about 75 per cent of the pig iron produced.

This uneven distribution of industrial enterprises and their remoteness both from the sources of raw material and from the consuming districts caused heavy losses to the national economy of the country. Naturally, the Soviet Government, which has set itself the aim of developing the productive forces of the country according to a definite plan and along strictly scientific lines, has from the very outset dealt with the question of the rational distribution of industry throughout the country.

Lenin dealt with this problem as early as 1918. It was he also who at that time put forward the idea of building up a new coal and metallurgical base in the east of the U.S.S.R.—what was known as the Urals-Kuzbas problem. The project visualised the

creation of a powerful iron and steel industry based on the iron ore deposits of the Southern Urals (principally of Magnitnaya Mountain) and the coal deposits of the Kuznetsk Basin.

This idea was further elaborated and put into practice on the initiative of J. V. Stalin.

Both the iron ore deposits of Magnitnaya Mountain and the coal deposits of the Kuznetsk Basin are extremely rich, and of a very high quality. The distance between them is about 1,250 miles, and, in order to utilize them to the best advantage, it was necessary to build two industrial centres; an iron and steel and ore mining centre in the Southern Urals, and an iron and steel and coal mining centre in Western Siberia.

The vast project was realized during the period of the First Five-Year Plan. An official decision was promulgated by the Soviet Government on January 16, 1929, providing for the construction of the Magnitogorsk Iron and Steel Works on the basis of the previously drawn up plans. On March 10 of the same year work was started on this construction, and on February 1, 1932 pig iron began to flow from blast furnace No. 1 of Magnitogorsk.

Simultaneously with the building of the Magnitogorsk plant, construction was going on on the Kuznetsk iron and steel works which started operation somewhat earlier than the former.

Professor Davis, an American engineer wrote *à propos* of the Urals-Kuznetsk project at the time that, according to preliminary data, the iron ore deposits discovered in the Magnitnaya Mountain district in the Southern Urals are the richest in the world. A considerable part of these ores do not even require concentration. Professor Davis pointed out that the Soviet government's plan to combine the exploitation of the Ural ore with that of the Kuznetsk coal, with the construction of two gigantic iron and steel plants at both ends, was one of the boldest and most stupendous projects ever undertaken in the history of the iron and steel industry.

This plan of the Soviet Government, which Professor Davis

characterized as a bold and stupendous project, has now materialized. The Magnitogorsk Combine mines iron ore for its own plants and for the Kuznetsk Combine. The Kuznetsk Combine, on the other hand, while receiving iron ore from Magnitogorsk, supplies the latter with coal mined in the Kuznetsk Basin.

The Magnitogorsk Works consist of a number of plants organized as a single administrative and economic unit with a huge output of iron and steel. The central feature of the Combine is the iron and steel works with blastfurnaces (production of pig iron), a steel smelting plant (production of steel in open hearth furnaces) and rolling mills, as well as a number of auxiliary shops.

Immediately adjoining the iron and steel works are the powerful mines where the iron ore is extracted and worked up. The neighbouring districts abound in deposits of limestone, dolomites, quartzite and fireproof clays. A special coke-chemical plant has been built for the production of coke. The Combine includes also a plant for the production of fire-proof materials (Dinas clay and chamotte) adjoining the iron and steel works.

The Supply of Raw Materials

The principal source of the iron ore is Atach Mountain, one of the four peaks of Magnitnaya Mountain, rising 2,017 feet above sea level. Its western slope is rich in magnetite deposits representing a huge lode amid volcanic rock formations.

The presence of iron ore in Magnitnaya Mountain was known long ago. Ore in small quantities was extracted here as early as 1747. But at that time nobody had a clear idea of the significance of these deposits. The Mountain attracted very little attention. It was situated in a sparsely inhabited steppe region devoid of any forests, and there were no railways. The little ore that was mined was carted by horses to the Byeloretsk Works situated about sixty miles from Magnitnaya Mountain.

Prior to the World War of 1914-18 the output of ore on Magnit-

naya Mountain never exceeded 50,000 tons a year. In those times all the Ural industries used only charcoal, and this necessarily limited the output.

All this has changed with the introduction of mineral fuel from the Kuznetsk Basin. The Kuznetsk coals coke well, have a small ash and sulphur content, and their known deposits reach hundreds of billions of tons. As a result, Magnitnaya Mountain has assumed a tremendous significance.

Thorough geologic surveys have established the amount of the ore deposits and their composition. It has been brought to light that Magnitnaya Mountain contains 450,000,000 tons of magnetite ore with an average content of iron amounting to over 60 per cent.

Due to the processes of erosion the top deposits have been largely transformed into easily restorable martite with a small sulphur and phosphorus content. Its average composition is the following: iron 64.47 per cent, sulphur 0.19 per cent and phosphorus 0.015 per cent. The deeper deposits contain more sulphur and less iron (an average of 58.34 per cent) but their phosphorus content is also small.

One of the largest ore mining enterprises in the world has been built up on the site of these deposits. The mine is well equipped with modern machinery. All the processes of ore extraction are a hundred per cent mechanized. There are also crushing, washing, sorting and agglomeration plants attached to the mine.

In the past seven years the mine supplied 30,000,000 tons of ore to the Magnitogorsk and Kuznetsk Iron and Steel Works. At present it supplies annually 6,500,000 tons of ore ready for the blast furnaces. This represents 18 per cent of all the iron ore mined in the U.S.S.R.

In addition to the Magnitnaya Mountain deposits, the Combine has at its disposal the Komarovo-Zigazinsk iron ore, the known deposits of which reach 150,000,000 tons, and manganese ore deposits estimated at 2,600,000 tons.

The districts in the vicinity of the Combine abound in valuable minerals which are used as fluxes and fireproof and building materials.

The known deposits of these minerals include:

Limestone	...	...	...	289,000,000 tons
Dolomite	...	...	...	2,700,000 „
Quartzite	...	...	...	6,000,000 „

The known deposits of fireproof clays and moulding sand reach scores of millions of tons.

Thus nature has fully provided the Magnitogorsk Iron and Steel Works and all its auxiliary plants with an abundant and uninterrupted supply of all the necessary raw materials for a long time to come.

Industrial Plants.

The *Coke-Chemical Plant* consists of four batteries (276 ovens) of the Koppers-Becker system and covers the entire chemical cycle. At the same time it provides an enormous amount of high-caloried gas which is utilized for the open-hearth furnaces and for other purposes.

The *Iron and Steel Works* includes four blast furnaces with a volumetric efficiency of 41,670 cu. ft. each. The output per day of each furnace is over 1,000 tons of pig iron.

There are ten stationary open-hearth furnaces of 150 ton capacity each and four of 350 ton capacity each with a total hearth area of 9,648 sq. ft. Two more open-hearth furnaces of 350 tons capacity each are now under construction.

The plant is equipped with a powerful blooming mill with two continuous billet-mills and six of the most up-to-date automatic merchant mills, including a wire-drawing mill of a design which is unique in the world. Another blooming mill is provided with a continuous billet-mill "720."

The huge Iron and Steel Works has its own:

Central electric power plant;
 Steam power department;
 Mechanical shop, forge-shop, foundry and repair shop;
 Chamotte and Dinas brick plant;
 Chemical, electrotechnical and thermo-technical laboratories;
 Railway, automobile and other transport facilities.

A huge reservoir, formed on the Ural River by the building of two dams, supplies the works with water and feeds the water supply system which has a daily capacity of 132,000,000 gallons of water. The Magnitogorsk Combine covers an area of 27 sq. miles in the valley of the Ural River.

By September 1, 1938, expenditure on the construction of the first section of the Combine amounted to 1,322,500,000 rubles.

The Combine employs 26,000 workers, engineers and technicians.

In the seven years following the beginning of its operation the Combine produced:

Over 30,000,000 tons of iron ore;
 10,500,000 tons of coke;
 8,200,000 tons of pig iron;
 5,600,000 tons of steel;
 4,400,000 tons of rolled steel.

The Iron and Steel Works has been gradually increasing production, while the construction of the Combine has been going on all the time. At present the first section of the Combine is nearly completed.

The following figures indicate the nature of its work in 1938:

Output of pig iron—1,796,000 tons;
 Co-efficient of volumetric efficiency of blast furnaces—0.90;
 Average annual output of pig iron per blast furnace—449,000

tons;

Output of steel—1,580,000 tons.

The output of pig iron at the Magnitogorsk Iron and Steel Works

amounts to nearly a half (42 per cent) of the total output of pig iron in tsarist Russia.

The Second Section.

When the second section of the Magnitogorsk Combine is completed within the next few years, it will include the following:

A mining enterprise consisting of three powerful crushing plants, a washing and a concentrating plant, an agglomeration plant and a number of auxiliary plants;

A coke-chemical plant with eight batteries (544 ovens) covering a complete chemical cycle;

Eight powerful blast furnaces;

Three steel-smelting shops with 29 stationary open-hearth furnaces (ten of 150 ton capacity and nineteen of 350 ton capacity);

Two blooming mills with continuous billet-mills "720," "630" and "450";

Six merchant rolling mills;

A rail and beam rolling mill.

The Combine will produce annually:

8,500,000 tons of sorted iron ore;

Over 4,000,000 tons of coke;

4,500,000 tons of pig iron;

5,000,000 tons of steel;

4,000,000 tons of rolled steel.

When thus completed the Magnitogorsk Combine will be the largest iron and steel enterprise in the world. Its annual production of pig iron will exceed that of all the iron and steel plants of tsarist Russia taken together.

The City of Magnitogorsk.

In the beginning, when the construction of the Magnitogorsk Works first started, a camp town of white tents sprung up at the foot of Magnitnaya Mountain on the banks of the Ural River. In

these tents lived the builders of "Magnitka"—engineers, technicians, workers. Soon, however, the tents were replaced by wooden barracks, and these have in their turn been replaced by brick buildings.

Today Magnitogorsk is a city of hundreds of tall well-appointed houses, with a population of 250,000, an electric power plant, water-works, scores of wide streets, squares, boulevards, parks, streetcars and a good bus service.

In 1938 the expenditures provided for in the city budget of Magnitogorsk included 8,856,000 rubles for educational purposes, and 19,185,000 rubles for public health.

An additional sum of 13,500,000 rubles was expended on education, public health, sports and social maintenance out of the budget of the factory committee of the iron and steel workers' union. Large sums are spent on these purposes by other public organizations, such as the trade unions of the building workers, miners, etc.

Magnitogorsk has two higher educational establishments: a mining and metallurgical institute and a pedagogical institute, forty secondary schools with 25,000 pupils, and pedagogical, industrial and medical training colleges.

In addition to these a variety of training courses function in the Works, such as courses for providing higher qualifications, factory apprentice courses, courses for the training of Stakhanovites, university and college preparatory courses. More than 60,000 workers completed these courses in the past six years. A sum of over 42,000,000 rubles has been expended on the maintenance of these courses. The four main libraries of this new city have 230,000 volumes.

The city of Magnitogorsk boasts a fine theatre with a seating capacity of 1,000, eighteen moving-picture houses, a circus, a large number of clubs, including the splendid iron and steel workers' club, which has a large stage and in which concerts are held regularly. Besides concerts by local musicians, recitals are given here

by singers and musicians from the largest centres of the country such as Moscow, Leningrad, Kiev, Tbilisi, Baku.

The population of Magnitogorsk, like the population of all towns and villages of the Soviet Union, receives expert medical aid free of charge. The city has seven polyclinics, six general and lying-in hospitals, 26 children's nurseries, a special children's polyclinic, ten women's and children's medical consultation centres, dispensaries, a camp-sanatorium for adolescents with accommodation for six hundred campers at a time, scientific sanitary stations, etc.

The city Soviet of Magnitogorsk devotes a great deal of attention to the development of sports. The facilities that have been provided for sports activities include two stadiums with a seating capacity of 16,000, an aquatic sports station on the Ural River, nine gymnasiums, a hunters' stand, and skating rinks in the winter. In the aeronautical club young people receive training in parachute jumping, gliding and flying.

This, in brief, is the story of an industrial giant and a large flourishing city that have sprung up in the course of a few years in a desolate and practically uninhabited district.

POSITION OF THE U.S.S.R. IN WORLD PRODUCTION



GRAIN

1st



AGRI. MACHINERY

1st



BET SUGAR

1st



TRACTORS

1st



GOLD

2nd



IRON ORE

2nd



MACHINES

2nd



FREIGHT CARS

2nd



ELECTRICITY

3rd



S. PHOSPHATE

3rd



STEEL

3rd



COAL

4th