

Magnitogorsk: Epic of Soviet Labor

By MILES M. SHEROVER

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A WHOLE nation aroused to enthusiasm by the building of a steel plant is surely without precedent in history. Yet more than any other project, Magnitogorsk has come to symbolize the objectives and pace of Soviet Russia's Five-Year Plan. When, on Feb. 4, 1932, the first blast furnace began to pour forth molten iron, the people reacted to the news as if it were of some decisive victory on a battlefield. By March 28 the first blast furnace produced its normal daily quota of iron according to the plan, 1,037 tons, and in the first days of June the second furnace was blown in.

In comparison with Magnitogorsk, the biggest construction job in Russia, the giant steel mills of the Ruhr and the mighty metallurgical plants of France, Belgium and England are like pigmies. Nothing like it in size and completeness had ever before been conceived. True, its total capacity will still be exceeded by the Gary, Ind., works, but this plant was built over a period of twelve years, while Magnitogorsk is less than two years old.

Though the first rivets of blast furnace No. 1 at Magnitogorsk were driven but fifteen months ago, its output of pig iron has already begun to satisfy Russia's new tractor and machine-building plants, hungry for metal. By the end of 1933 Magnitogorsk's eight 1,000-ton blast furnaces will be ready to produce 2,500,000 tons of pig iron a year. Ulti-

mately, this capacity will be increased to 4,000,000 tons, which will make it the largest steel plant in the world, producing one-third as much steel as all Germany's highly industrialized metallurgical plants put together.

What is being built at Magnitogorsk on an area of twenty square miles is not one large mill, but a complete series of interdependent metallurgical and chemical plants which are to form a base for the industrialization of half a continent.

Here one undertaking, costing 800,000,000 rubles (about \$400,000,000 at par), has combined the building of a great dam, capable of impounding 10,000,000,000 gallons of water, a power house that would be sufficient for Moscow's requirements, the development of vast iron ore deposits and limestone quarries, the construction of coke ovens with a capacity greater than any in Europe, a concentrating plant which must handle 20,000,000 tons of crude ore a year, blast furnaces, open hearths, Bessemers, blooming and rolling mills. Alongside these are to be chemical factories which will extract the tar, ammonium sulphate and benzol by-products, and huge machine and locomotive repair shops (because the plants must be as nearly self-contained as possible), such accessory industrial enterprises as brick works with an annual capacity of 30,000,000 bricks, lumber mills and woodworking shops. Scores of locomotives, thousands of freight cars and nearly 200 miles of standard gauge track are needed for transportation within the plant area alone. The metallurgical combine spreads over into an adjoining valley where preliminary work has already been

started on a pipe mill whose products will carry gas and oil across the countryside from Baku and Grosny to the industrial centres.

Magnitogorsk impresses not alone by its size, nor even by the speed of its construction which has triumphed over incredible obstacles, but also by the daring of locating this modern, complex giant of metallurgy in the most backward section of what was only yesterday one of the world's most backward countries. Against a background of primitive culture, an entire steel industry is for the first time in history being created in one place, complete as a unit of design and construction. By comparison the best steel plants elsewhere are patchwork affairs of newer and older units enlarged and improved from year to year to meet growing demands and changed technical processes.

Yet it was an American firm that was selected to design and develop the entire project. In speaking of the undertaking, William A. Haven, chief of the American engineering staff, has said: "Magnitogorsk was an opportunity that comes but once in the lifetime of an engineer. The magnificent setting provided by nature for this enterprise made possible a general plan that for completeness, symmetry, utility and even beauty, from an engineering and operating viewpoint, has rarely been equaled."

Two years ago Magnitogorsk (Magnito Mountain) was nothing but a barren waste of bleak Siberian steppe, uninhabited except by nomadic Kazak settlements. On the Siberian side of the Urals, it is 500 miles from the nearest large city, and even today is connected with the outside world only by a new and still unperfected single track railroad line. Its very inaccessibility may be one of the reasons for the creation of the steel city in such a place, for it is thousands of miles from any of the Soviet frontiers and practically immune from foreign attack.

Magnito Mountain, the world's

richest and most highly concentrated deposit of iron ore, is the real reason for Magnitogorsk. The existence of this treasure had been known for 200 years, but like many other natural resources of Russia it was allowed to lie untouched until recently. The ore deposit is the face of the mountain itself, inviting the assault of the huge electric American shovels, which scoop up nine and one-half tons of ore with every bite. The ore averages 57 per cent pure iron and the top layers are so rich that, after crushing, they can be dumped directly into the furnaces without concentration. Not a penny's worth of expensive stripping is necessary. Dr. Smith, the American geologist on the work, says: "There is enough ore here to keep this huge plant going for 100 years."

Within a few miles of Magnito Mountain there lies an inexhaustible bed of limestone, as essential as iron ore to the production of steel. Likewise, the immense quantity of water necessary to quench the thirst of the blast furnaces, 40,000,000 gallons daily, is supplied by the Ural River which flows through the valley. Building a concrete dam 3,500 feet long, to create an artificial lake five miles in length, is in itself a striking engineering achievement.

But iron ore, limestone and water are in themselves valueless without the coke necessary for the smelting process. Here the Soviet planners found themselves face to face with a seemingly insurmountable obstacle. Nowhere within hundreds of miles was there a good quality of coking coal. True, at Kuznetsk a marvelously rich field of coal had been discovered, coal equal to the best grade of Cardiff coking coal, but Kuznetsk is more than 1,400 miles from Magnitogorsk, in a remote part of Siberia, near the Mongolian border. To transport the 4,000,000 tons of coal a year necessary for Magnitogorsk there was only a single line of track, already much overburdened most of the way by

Transsiberian traffic. The decision made was characteristic of the authors of the Five-Year Plan—not only to use Kuznetsk coal for Magnitogorsk, but also simultaneously to construct a secondary metallurgical base at Kuznetsk, so that the 14,000 railway cars to be in constant use carrying coal to Magnitogorsk could return with iron ore to Kuznetsk. Meanwhile a large portion of the Transsiberian Railway is being double-tracked, and a new road is to be built which will considerably shorten the distance.

When the American engineers arrived at Magnitogorsk on the newly laid railroad line, in May, 1930, they found a straggling settlement with about 3,000 workers engaged in erecting barracks for the builders that were to come. Today Magnitogorsk is growing from a construction camp into a feverishly busy city of 200,000 people, working as unceasingly during the long Winter nights, under the illumination of electric floodlights, as it does by day. Already 62,000 workers are on the payroll, and the schedule calls for an increase to 120,000 workers in the next few months. The housing, feeding and clothing of these people, particularly since supplies for them as well as all construction materials must be brought in on the single-track line, presents such a serious problem that men with families are already prohibited from going to Magnitogorsk. Only single men and women or married couples, both of whom can be employed, are wanted.

The Russians realized from the first that no single government organization could cope with so large a project. If Magnitogorsk was to be built, the entire nation's efforts must be mobilized. Into this task the Russian Communist party threw itself with characteristic energy. Every vehicle of publicity was employed. The newspapers, the radio, the cinema, the theatre, the factories, the trade unions, the collective farms, the schools, meetings, parades, billboards and posters, all were made use of in

the campaign to awaken the people to the vital importance of Magnitogorsk and of the sacrifices required to create it.

Hardly a factory in the land had not some orders on hand to fill for Magnitogorsk. Eighty-five per cent of the tonnage of steel necessary came from Russia's own older metallurgical plants. In every factory the new steel plant was given first call. Other orders and other requirements were side-tracked. Special workers' committees were organized in various factories to speed up the manufacture and shipment of material and equipment needed for Magnitogorsk. Newspapers were specially published by many of these committees to inform the workers of the progress being made on Magnitogorsk orders and to explain their importance to the whole project. In all the industrial centres the school children were taught to urge their parents to extra efforts to supply materials for Magnitogorsk. Scoreboards were set up on which the children showed how many hours of labor the older members of their families were contributing to the work.

Over the whole of Russia's greatly burdened railroad system freight for Magnitogorsk is given the right of way. Ordinarily freight requires a week to go from Leningrad to Moscow, but imported equipment urgently needed for the blast furnaces was rushed from the Leningrad Harbor to Magnitogorsk, a distance five times as great, in seven days. All over the country one sees freight cars with signs painted on their sides: "Freight for Magnitogorsk. Don't delay." Cities may lack essential supplies, consumer goods for the population may be delayed weeks in reaching their destinations, but freight for Magnitogorsk must arrive on time.

Magnitogorsk is essentially the creation of the Soviet youth; 60 per cent of the workers at Magnitogorsk are under 24 years of age. The Komsomols, Russia's Communist youth

organization numbering nearly 6,000,000 members, have adopted Magnitogorsk as their own project and supply most of the *udarnik*, or "shock brigades," in the industrial struggle for the steel plant. Their battle cry is "Give the country iron." Under a rigorous, self-imposed discipline these young workers have helped largely to overcome many difficult construction problems. The working day is one of eight hours, but no "shock brigade" Komsomol would dream of stopping when the whistle blows. Even when he has finished his day's work he holds himself in readiness for any emergency caused by a break-down in the schedule. It may be unloading lumber from badly needed freight cars which are causing congestion at railroad sidings because of a lack of labor, or night work pouring concrete on the dam to stem the river before an early Spring thaw floods the valley, or the tedious task of "liquidating" illiteracy among newly arrived peasants.

The fighting spirit of the young Communists communicated itself to the office and technical personnel. Bookkeepers, stenographers, supply clerks, teachers, cooks, waitresses, all craved the satisfaction of taking actual part in the construction. These employes, of whom there are over 2,000, volunteered to work on their rest days in organized brigades of *subbotniks*, or Sabbath workers, unloading bricks from railroad cars, piling lumber or doing plain pick and shovel work.

Jacob Gugel, who is in complete charge of all construction work at Magnitogorsk, and who is to head the metallurgical combine when it is completed, is a man of 35 with nothing more than a common school education. He was a mechanic in one of the Donbass metallurgical plants at the time of the civil war when Deniken was ravaging the Ukraine, and when peace was restored he became interested in re-establishing production in the ruined plant where he had

been engaged. He was elected foreman by his fellow-workers and, as soon as his talents for organization and management were recognized by the directors, he was appointed superintendent of the plant. Within a few years he became the director of the All-Union Steel Trust, the governing body of the Soviet steel industry. His appointment to head Magnitogorsk was at the personal instance of Stalin, who looks upon Gugel as one of the ablest executives in the country. As a member of the Communist party, Gugel receives a salary of less than \$200 a month (the maximum allowed to party member executives), a fraction of the sum received by the engineers and executives who assist him.

Magnitogorsk, a supreme example of a modern steel plant, is being erected by means of comparatively little construction equipment. Sheer brute force—the strength of thousands of peasant hands—takes the place of equipment—steam shovels, trench excavators, power derricks and motor trucks—which Soviet Russia cannot afford to buy abroad. The same project could undoubtedly be carried out in America with one-quarter or one-fifth the number of workers. American construction engineers, accustomed to working at home with the most modern labor-saving installations, are amazed that so much has been accomplished at Magnitogorsk without machinery. Earth excavation by millions of cubic yards, concrete poured by hundreds of thousands of tons, building material and other supplies unloaded from endless miles of railroad cars—all this work done with little more than hand-made shovels and wheelbarrows. A thirty-five-ton steel girder was put into place wholly by hand power with the aid of elementary gin poles. Heavy parts of crushing equipment (said to be the largest in the world) were pulled up to the concentration plant on the side of Aiderli Mountain by methods that could not have advanced much beyond those used by

the pyramid builders of ancient Egypt.

Skilled labor, as Americans know it, is practically non-existent at Magnitogorsk. A man calling himself a carpenter may have done nothing more to deserve the name than help to erect a log cabin in his native village. A crude native hatchet resembling a medieval battleaxe and a home-made saw may constitute the sole equipment of his tool chest. He works by rule of thumb and often is slow to recognize the virtues of foreign-made tools. Three-quarters of these workers are of raw peasant stock, none of whom has ever worked in the building industry or has even seen a factory under construction. They have been enlisted for the job by recruiting agents, who went to the collective farms with the appeal to rationalize their collective farming so that surplus men and women might be released for construction work.

The peasants who are being transformed into artisans by hot-house methods are gathered from all corners of the Soviet Union. No less than thirty-five Soviet nationalities are represented among them, all working together in spite of the differences in customs and language. A colony of several hundred Americans and Germans, all of whom are skilled construction and steel plant operating specialists, compose the foreign settlement.

More than 10 per cent of the workers at Magnitogorsk are women, and there is not a single branch of the work in which they do not participate. For example, women are to be seen high up on the scaffolding around the blast furnaces, carrying hot rivets to the men. (The Russians have not yet learned our steel workers' knack of tossing rivets.) Even welding by the electric and oxyacetylene processes holds no terrors for the women. Women bricklayers are quite common. Setting reinforcement iron is a job on which the Russian engineers say the women are as adept as men. No distinction is made between men and wo-

men; equal wages for equal work and equal opportunity are rules that are fundamental in the Soviet Union. And so women are to be found at Magnitogorsk holding positions of foremen and superintendents, and even engineers in charge of important work.

The most difficult problem facing the Soviet authorities is that of finding the workers to run this plant with all its complex processes. In full operation, the mine, steel mills and auxiliary plants will require a permanent force of about 21,000 workers, practically all of whom must be highly skilled men. A number of them will be supplied by the older metallurgical plants in the Donbass and the Urals. But the majority will be young peasants only recently tilling the soil before becoming engaged in constructing the plant. So that they may become skilled steel workers, thousands are spending their free time in the schools which have been organized to provide intensive technical training. Though still a construction camp, Magnitogorsk has already opened its institute of metallurgy to function in close co-operation with the plant. Before the blowing in of the first blast furnace, practical experience supplementing theory was given the students by sending them to one of the steel plants in the Urals for a stay of from four to six months. But practical work is now available on the spot, and as fast as the other furnaces are put into operation the students will join the permanent staff and work side by side with the older and more experienced men.

Thus are the peasants of the steppes being transformed into the working legions needed to man the new industries. That all this is more easily said than done is clearly recognized by the Soviet chiefs. Many years must pass before the new industrial plants attain maximum capacity and before the new proletariat acquires that respect for machines and labor discipline essential to mod-

ern industrial production. Industrialization of a peasant country is no simple task, and creating socialism where the majority of the workers have not long ago stepped from behind the plow is even more difficult.

To speak only of the plant at Magnitogorsk gives an incomplete picture of the construction activity there. Simultaneously with the erection of the furnaces, coke ovens and scores of buildings that cover the industrial area, a Socialist city is being built to house the permanent workers. This city, designed for a population of about 200,000, will be located a few miles from the plant on an elevation 200 feet above it. Out on the steppe, where the Summer heat destroys all vegetation, a system of underground water supply and drainage is being installed to make Magnitogorsk an oasis in the plain, a city of flowers and greenery. Ninety per cent of its area will consist of parks, gardens, playgrounds and landscaped walks.

The city is being laid out in districts, each with a group of brick houses for 9,600 people. These houses will be of two types, one containing two, three and four room apartments with kitchen and bathroom; the other on the "communal" plan, in which living quarters will be small, individual rooms, without housekeeping facilities, as their occupants will take their meals at the community restaurants. Each district will have its own food and supply shops, a large department store, schools, theatres, a club, a nursery and a kindergarten.

Life in each district will centre about the clubhouse, where the attrac-

tions will be so many and so varied that people will spend their leisure there rather than at home. Here there will be facilities for amateur theatricals, a gymnasium, a swimming pool, billiard, bowling and chess rooms, a library and lecture halls. The community will take care of the children in the nurseries and kindergartens so that mothers may be free for whatever other activities they choose.

The plant at Magnitogorsk will feed a host of new industrial enterprises in the Urals and Central Russia—the Ford plant at Nizhni-Novgorod, with an annual capacity of 140,000 cars, the Cheliabinsk caterpillar tractor works, the machine-building trusts of Sverdlovsk, the motor and turbine plants at Ufa and the production of rails so urgently needed for the reorganization and rehabilitation of the Soviet Union's transport system as well as for the 16,000 miles of new railroads contemplated by the second Five-Year Plan.

Before the war all Russia's iron and steel plants produced barely 4,000,000 tons of metal, whereas in 1932 the Soviet Union plans to increase its steel output to 9,500,000 tons. If it reaches this figure, it will outstrip all European countries in ferrous metal production and stand second only to the United States. Even then, the Soviet output will be insufficient to meet the needs created by ever-increasing industrialization. According to the figures recently announced for the second Five-Year Plan, the steel output in 1937 must reach 22,000,000 tons. In achieving this total, Magnitogorsk's ultimate capacity of 4,000,000 tons will be the leading factor.

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