The original base of the Russian iron and steel industry was located near Tula which is situated in the Central Industrial region. The smelting of small deposits of local iron ore was begun with the utilization of charcoal made from the surrounding forests. A secondary region developed near Lake Onega in the northwestern section of Russia. The local availability of iron ore and charcoal and a nearby market were major factors in the establishment of this early center of production. During the reign of Peter the Great in the early 18th century a considerably greater development of ferrous metallurgy took place in the Urals where there were rich deposits of iron ore. Again the smelting of iron ore was done with charcoal from local forests. The Urals quickly became the main metallurgical base of Russia and remained in that position for nearly two centuries until they were surpassed by the eastern Ukraine with the technological shift in iron smelting from charcoal to coke.¹

In 1718 Russia produced 25,000 tons of iron from the Tula area. After the shift to the area of the Urals, 56,000 tons of pig iron was produced in 1767. This was twice as much as was produced in England during this time.²

Western European industry underwent the industrial revolution, and by 1860 Russia lost its lead in iron production.

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At this time England produced 3,980,000 tons of pig iron. France produced 967,000 and Russia produced only 336,000 tons.3

Modern development in Russian iron and steel started in the 1870's when Belgian and French capital was invested in a coal-based iron industry in the Ukraine. The coal field of the Donets basin and Krivoy Rog iron ore were connected by a railroad in 1886.4 This ore-coal movement is similar to the Ruhr-Lorraine exchange.5 By 1900 the Ukraine had replaced the Urals as the main metallurgical base of Russia. In 1913 the Ukraine produced 75 per cent of the iron ore of the country, 69 per cent of the pig iron, and 57 per cent of the steel, while the Urals produced about 21 per cent of both pig iron and steel. The Tula and Moscow area produced only about 5 per cent of both.6

The Ukraine was especially suited for the iron and steel industry. Increased railroad construction caused a growing demand to find inexpensive and close products. The coking quality coals of the Donets area made possible the utilization of larger furnaces. The proximity of Krivoy Rog iron ore, and the influx of foreign capital and technical improvements helped the development.7 A large limestone deposit is located at Yelenovka and just to the east of Krivoy Rog, the town of Nikopol contains the world's largest reserve of manganese.

Krivoy Rog in eastern Ukraine is the largest deposit of iron ore in the nation, and although reserves of high-grade ore have been seriously used up, vast untapped reserves of low-grade ore suitable for concentration still exist. Today large ore concentrators are being built in the region, and the area will remain the primary producer of iron ore in the country. In 1956 the Ukraine was credited with having nearly 38 per cent of the proved reserves of iron in the Soviet Union. These reserves include the low-grade ores on the Kerch Peninsula of the Crimea, as well as those of the Krivoy Rog. Large integrated iron and steel centers in the region include Donetsk (formerly Stalina), Makeyevka, Zaporpzhye, Dnepropetrovsk, and a large plant at Zhdanov on the shore of the Sea of Azov. The Zhdanov plant depends upon ore from the Kerch region.8

After the Bolshevik takeover in 1917 the development of the iron and steel industry occupied a dominant position in their planned economy. It was recognized that without iron and steel such basic industries as machinery, construction equipment, and transport could not be developed. It was also recognized that an iron and steel industry is certainly necessary in order to establish a strong military position.9

With the implementation of the First Five-Year Plan the expansion of the iron and steel industry was assured. In the period from 1928 to 1940 the output of pig iron increased from 3,282,000 to 14,902,000 tons and steel output increased from 4,251,000 to 18,317,000 tons. Increases during this period were obtained by reconstruction and expansion of existing plants as well as by the building of new plants in diverse sections of the Soviet Union. The most spectacular development in the growth of the iron and steel complex in the 1930's was the creation of the Urals-Kuznetsk Combine, with giant new centers of iron and steel being built at Magnitogorsk, Nizhniy Tagil, and Chelyabinsk in the Urals and at Novokuznetsk in the Kuznetsk Basin. As a result of the coordinated plan, Kuznetsk coal was sent by rail to the Urals, and the iron ore was shipped from Magnitogorsk in the opposite direction which proved invaluable in a few years.10
The creation of the Urals-Kuznetsk Combine required large scale construction of new railroad facilities. A double-track line was laid from the Kuznetsk area to the Urals, and local improvements of the railways were made in the Urals and in the Kuzbas. The distance between the coal of the Kuznetsk and the iron ore of the Urals is more than 2,000 miles. Many of the early coal burning trains would use up to a third of their cargo in transit. The region would not have opened as it did if the Transsiberian Railroad had not been built. Although this was a very expensive method of producing steel, it paid off during World War II when Germany captured the Ukraine. It was also a good method of settling the interior of Siberia. E. Willard Miller summed up this period very well in the following statement: “Although the output of iron and steel rose rapidly between 1928 and 1940, the distributional pattern changed less than is generally thought. In 1928 the Ukraine had about 72 per cent of the pig iron production; in 1940 it still dominated with 66 per cent of the total. It was not until World War II that decisive changes occurred in the location of the iron and steel industry. In the Ukraine the German invasion destroyed 62 blast furnaces and 213 open-hearth furnaces. To compensate for this loss a mammoth building program was inaugurated in the Urals and western Siberia. In 1943 and 1944 13 blast furnaces capable of producing 2,300,000 tons of steel, and 28 rolling mills with an annual capacity of 1,700,000 tons of finished steel were built in the East.

“The destruction and disruption of production in the Soviet iron and steel industry resulted in a significant temporary decline in production. In 1945 only 8,803,000 tons of pig iron and 12,252,000 tons of steel were produced. At the conclusion of hostilities emphasis was placed on rebuilding and enlarging the industry. By 1948 steel production surpassed the prewar level until 1949 when 16,389,000 tons were produced. The rapid growth of the steel industry in the early post-war period reflects the availability of large quantities of scrap from the war period.”

Within the Urals the Chelyabinsk Oblast, with iron and steel centers at Magnitogorsk and Chelyabinsk, is the main iron and steel producing district. The chief factor luring the metallurgical industry is the availability of iron ore. The principal mining districts are Magnitnaya Mountain at Magnitogorsk, Bakal and its mining center of Rudnichmy to the south of Magnitogorsk. The total iron ore reserve of the Chelyabinsk Oblast only amount to about one-half that of the entire Urals.

Magnitogorsk is the prototype of a recent communist industrial city. It was founded in 1931 near the Ural River at the foot of Magnitnaya Mountain. By the end of the 1930's this city was one of the larger iron and steel centers of the Soviet Union. Its population, which was 146,000 in 1939 now is approximately 300,000 persons. A complete metallurgical complex of blast furnaces, coke ovens, open-hearth furnaces, etc. exist in the city.

In the 1950's, almost two-thirds of the coking coal for Magnitogorsk came from the Kuzbas, and one-third from Karaganda. Rich ores are almost used up, and Magnitogorsk blast furnaces are being fed concentrates from large ore bodies around Kustanay, in Kazakhstan. Markets are not near; the closest metal-fabrication center of importance is Chelyabinsk.

Other metallurgical centers have also thrived in the Urals. The best of the old, charcoal consuming plants
have been reconstructed and modernized. These plants produce specialized high quality metal. As a result of the demands for iron and steel during World War II, the traditional charcoal-iron producing city of Nizhniy Tagil was developed as a new and modern steel center. It is not competitive with Magnitogorsk and other steel centers. Other important iron and steel centers of the Urals include Serov, Nizhnyaya Salda, Ufalai, Alapayevsk, Sverdlovsk, and Beloretsk. The importance of the Urals-Kuznetsk Combine has declined since World War II with the development of the Karaganda coal fields, which has a closer proximity to the Urals, and the mining of iron ore locally in the Kuznetsk area.17

Novokuznetsk in the Kuznetsk Basin is the most important metallurgical center in Siberia. The plant is located there due to a large deposit of coking coal. Originally the iron ore was secured from the Urals as part of an official exchange of raw materials in the Urals-Kuznetsk Combine. Since World War II large deposits of iron ore have been developed south of Novokuznetsk in the Gornaya Shoriya area.18 Limestone deposits are found in the immediate vicinity of the plant. A complete metallurgical complex exists in the area, and a large chemical industry based on the by-products of the coking process is also present.19

Paralleling this economic growth was an urban growth which was equally spectacular and important. Novosibirsk more than tripled in size after 1926 and was the largest city in Siberia by 1939 with more than 400,000 people. It was the chief administrative center for the Kuznetsk Basin Mining and Industrial District during the period. Novokuznetsk had the rapid growth ratio of more than 4,350 per cent in these 13 years. Prokopyevsk grew more than 1,000 per cent and Kemerovo increased more than 610 per cent at the same time. Except for Tomsk and Biysk, all the other sizable cities of the region at least doubled their populations in this 13-year span.20

An important impact on the agricultural economy of the region and consequently also on the rural population occurred about this time when individual peasant migration was prohibited after 1930. The resultant urban growth provided an increased local market, especially in dairy products and grain. Also the completion of a railroad from Novosibirsk to Central Asia, the Turk-Sib Railroad, opened another outlet for the grain surplus of the Altai steppe area, so the agricultural districts continued to prosper and became more integrated with their region than they had been in earlier years.21

The industry that is found in the U.S.S.R. today is largely a result of the Soviets themselves; indeed it is largely an outcome of construction after World War II, since so much of the prewar buildup was destroyed by the invading Germans. At the time of the Revolution some 70 per cent of the industrial production of Russia was concentrated in the European part of the country. The Central Industrial Region, Moscow-Gorky, accounted for more than 80 per cent of the textile industry, and the Ukraine and adjacent parts of the Donets Basin in the Russian Republic accounted for over 90 per cent of the coal production, almost all the iron ore production, and nearly 75 per cent of the pig iron production. The machine-building industries almost entirely were located in the western part of Russia.22

It was the intent of the Soviets to disperse industry into underdeveloped peripheral areas, and although some
new industrial enterprises were built in such areas as the Urals, Siberia, the Far East, and Middle Asia, the fact was that the relative distribution of industry remained relatively unchanged up until World War II. Professor Paul Lydolph stated the Soviet position on this matter very clearly in the following: “Economic realities induced conservatism into ideological policies for rapid widespread change. According to Soviet doctrine the economy should develop according to the following precepts: (1) there should be a rapid industrialization, (2) the economic activity should be distributed as evenly as possible throughout the country, (3) the economy should stimulate the development of backward nationalities and area, (4) production should take place close to raw materials and markets, in order to minimize transport, and (5) specialized production should be promoted in regions that possess uniquely favorable conditions for such developments, in terms of either natural resources, transport facilities, skilled labor, or historic precedence.”

In practice, however, Dr. Lydolph went on to explain, “it was found that some of these objectives are largely mutually exclusive. Shortage of capital and emphasis on speed of industrialization have led to the construction of giant industrial enterprises in old centers of production, at the expense of industrial dispersal. Also, it became apparent that if major developments were to take place in the East, the requirements of massive construction projects, movements of people, and urban housing and facilities would have to be met initially by the industries of the West. Thus the industrial capacities of the old centers had to be strengthened before large-scale development could be attempted in outlying areas. During the late 1930’s considerations of national defense and strategic security under the eminent threat of war induced abnormalities into the economy which further delayed the eastward movement.”

After several months of German attacks, beginning in June 1941, more than 1360 major industrial enterprises, mainly of military significance, were moved from European Russia and the Ukraine industrial complex into the eastern regions of the country. About 455 enterprises were relocated in the Urals, 210 were moved to western Siberia, i.e. the Kuzbas, and 250 to Middle Asia and Kazakhstan. Before the Germans were finally repulsed, they had occupied and largely devastated an area that before the war had housed 40 per cent of the total population of the Soviet Union and had produced 62 per cent of the coal, 58 per cent of the steel, 68 per cent of the pig iron, and 60 per cent of the aluminum industry. During this time the eastern regions experienced a rapid growth and the Urals eventually produced 40 per cent of all the war industrial materials. Between 1940 and 1943 the output of industrial production in western Siberia increased 3.4 times. These hastily relocated industries remained in the eastern areas after the war, and new industries were added to augment them.

In 1960 the non-European part of the country, with four-fifths the total territory and three-fourths the total fuel and raw material resources, still possessed only one-third of the population and one-fourth of the industrial production of the U.S.S.R. However, it appears that as a result of World War II the Western area has suffered a permanent setback in its relative position among Soviet regions, and the East, including the Urals, has been gaining in its per cent
of total production. The Seven Year Plan indicated that in 1965 the Urals, Siberia, the Far East, Kazakhstan, and Middle Asia accounted for more than 40 per cent of the national capital investment and will produce 44 per cent of the pig iron, 48 per cent of the steel, 50 per cent of the coal, 30 per cent of the oil, 46 per cent of the electric power, and more than 45 per cent of the lumber.27

Since World War II there have been attempts to decentralize the Soviet metallurgical industry. Although this has not been highly successful, isolated new centers of production have developed. The increase in output in certain republics is significant. For example, steel production in the Georgian SSR rose from 400 tons in 1945 to about 500,000 tons by 1960 with the production being centered in Rustavi. In Azerbaijan during the same period it increased from 23,300 tons to 400,000 in 1960.28

All five-year plans since World War II have provided for high rates of growth in the iron and steel industry. For example, in the Sixth Five-Year Plan, it was planned to increase the iron and steel production by one and a half times. New plants are being built, such as the Cherepovets iron and steel plant near Leningrad and the Orsk-Khalilovo iron and steel combine in the Urals, as part of the expansion projects. The iron ore for the Cherepovets plant comes from the Kola Peninsula and the coal is mined at Vorkuta. The limestone is obtained in the Baltic area. This entire operation is intended for the Leningrad metropolitan area.29 The Karaganda plant is now in operation and several other new plants are being developed in Siberia.30

The 1970 target for Soviet steel production was 124 million tons. It is planned to produce 150 million tons of steel in 1975 and some 200 million tons of steel in 1980. Produced steel in 1967 totaled some 102 million tons.31

If the planned increases occur and the production of the United States remains the same, the Soviet Union will achieve its goal of producing more iron and steel than the United States. This author remains skeptical as to their probability of success.

(3) Lydolph, op. cit., footnote 2.
(6) Miller, op. cit., footnote 1, p. 304.
(9) Miller, op. cit., footnote 1, p. 191.
(10) Miller, op. cit., footnote 9.
(11) Miller, op. cit., footnote 1, p. 303.
(13) Miller, op. cit., footnote 1, p. 192.
(14) Miller, op. cit., footnote 1, p. 304.
(17) Miller, op. cit., footnote 1, p. 304.
(19) Miller, op. cit., footnote 17.
(22) Lydolph, op. cit., footnote 2, p. 328.
(23) Lydolph, op. cit., footnote 22.
(28) Miller, op. cit., footnote 19.