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REVIEW OF EFFORTS TO DEVELOP AND EQUIP THE USSR CEMENT INDUSTRY

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The shortage of cement is continuing in the USSR, and the consumption of cement has been strictly controlled by the State Planning Committee. To obtain an extra carload of cement, plant directors often violate rules by exchanging for it products of their plants or other critical materials of which they happen to have a surplus. Kolkhozes are almost completely deprived of

STATE	X	NAVY	X	NSRB	DISTRIBUTION						
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cement for their construction needs. In rural construction, cement is replaced by a mixture of clay, lime, and straw. The construction of small, primitive cement and lime plants is encouraged by the authorities to meet the needs of local industries and housing projects in small republics and autonomous oblasts.

The lack of cement became rather acute during the First Five-Year Plan. Construction of new cement plants involved considerable expenditure of foreign currencies, as the domestic machine-building industry was unable to build the necessary plant equipment because of lack of experience and a shortage of machine tools for making gears of larger diameter (up to 5 meters). During the First Five-Year Plan, the Institute of Cement Industry was created in Leningrad within the system of the People's Commissariat of Heavy Industry. This institute began to study and develop the manufacturing processes, using raw materials from different localities, including the Donbass, Moscow, and others. At the same time, the machine-building department of this institute made plans for cement plants of small capacity -- up to 500,000 barrels per year.

The equipment for cement plants in Russia and later in the USSR had always been imported, mainly from Germany ("Polysius" in Dessau and Krupp-Gruson in Magdeburg). During the Second Five-Year Plan, the "Uralmash" Plant in Sverdlovsk was entrusted with the task of planning the equipment for a cement plant of a 250,000-barrel capacity and of manufacturing the necessary machinery for this plant, on the basis of machinery previously imported from Germany. The "Uralmash" Plant was partly assisted by the Institute of Cement Industry in Leningrad in preparing this plan.

As the extensive construction in the USSR required more and more materials, the government decided to create a separate All-Union People's Commissariat of Construction Materials Industry and L. A. Sosnin was appointed head of the new commissariat. One of the main administrations of this commissariat, the "Glavtsement" (Main Administration of Cement Industry), became the top authority for the entire cement industry of the USSR, with the exception of small cement plants which remained under the jurisdiction of the People's Commissariats of Construction Materials in various republics. The new commissariat was extended every possible assistance by the government, as the shortage of construction materials was seriously delaying the completion of numerous construction projects. To increase cement production, an extensive plan was put into force for the reconstruction of existing plants and construction of new ones. The following plants were reconstructed and considerably enlarged: two Novorossiysk plants, "Krasnyy Oktyabr'" Plant in Moscow Oblast, "Gigant" Plant, Georgian plant, near Tbilisi, two Donbass plants, Podol'sk plant, and Leningrad plant. Newly built plants were the Dneprodzerzhinsk plant, Far Eastern plant, and Karaganda plant.

Construction and expansion of cement plants depended on the proximity of large-scale construction areas: the Moscow industrial region, Donbass region, Ukrainian region (including Krivoy Rog, Zaporozh'ye, and Dneprostroy), Leningrad, and the Far Eastern region. Not all of these locations provided good raw materials for the cement industry, but the location of new cement plants near main construction areas relieved the railroads of excessive cement transport.

Reorganization and expansion of existing plants, as well as construction of new plants, were carried out partly by equipping the plants with machinery manufactured by the "Uralmash" and Kramatorsk plants. These two plants supplied gears and rims for the kilns and grinders, screens, small reductors, and kilns of smaller capacity. Larger machines, i.e., large reductors, large grinders, and kilns, were purchased in Germany and partly in Japan. As a result of these efforts, the USSR cement industry produced in 1939 about 7 million tons of cement, as compared with 4 million tons in 1929. However, the operation

of cement plants was considerably delayed owing to an inadequate supply of excavators and of locomotives and cars for narrow-gauge railroads serving the quarries, and the shortage of measuring instruments, including pyrometers, thermocouples, and electrical measuring instruments.

The war and the German occupation of the western USSR seriously affected cement production. It was quite impossible to evacuate the bulky equipment of the existing cement plants, especially the kilns. On the other hand, it was impossible to build new plants for lack of equipment. Many plants were destroyed by the retreating Soviet Army and the country lost a large number of important cement plants: Dneprodzerzhinsk plant, Donbass plants, Belorussian plant, Leningrad plant, and Podol'sk plant. The largest plants in Novorossiysk were badly damaged during the battles of 1942-43. As a result, the postwar production of cement dropped to 2.5 million tons a year, whereas enormous quantities of cement were required to repair the extensive damage and to begin new construction in areas which had been occupied by the Germans. Consequently, it was decided to begin the restoration of damaged cement plants immediately and to equip them with machinery dismantled in Germany. The fighting was still going on near Berlin when dismantling of cement machinery and exporting it to USSR had begun in Breslau and other cities of Silesia.

P. F. Lopukhov, director of "Glavtsement," more than half of all the directors of cement plants, and engineers specializing in cement were sent to Germany to supervise the dismantling and shipping of the equipment to the USSR. In addition, Director Lur'ye of the Institute of Cement Industry and almost all of the institute's personnel were sent to Germany to assist in the task.

To ensure effective technical supervision, a concession was made to the Ministry of Construction Materials Industry to send more persons to Germany than was permissible under existing regulations. For instance, the largest ministries were allowed to send only five to eight persons as their representatives to the Administration of Reparations and Deliveries, whereas the Ministry of Construction Materials Industry was permitted to send 30 persons by special decree of the Council of Ministers USSR.

It was a known fact that Germany produced about 18 million tons of cement a year and that the main cement plants were located in Eastern Germany.

To expedite dismantling of the badly needed equipment, tens of thousands of specially mobilized Germans, repatriates, German prisoners of war, and members of the Soviet Army construction battalions were used, and high priority was given to transportation of dismantled equipment to the USSR. By 1946, a number of plants with a total productive capacity of 2 million tons had been dismantled. Among the dismantled plants was the "Tissen" Plant, the largest in Germany, and two "Preisag" plants in Rudersdorf (east of Berlin). Construction of these three plants with a total output of one million tons per year had been completed by the Germans in 1942 and the cement produced was used mainly for building automobile highways. Hundreds of steam locomotives, thousands of railroad cars, machine tools, and other needed equipment were brought over from Germany for the reconstructed cement plants. However, there was a shortage of excavators, which were the basic equipment for work in the quarries. Representatives of several ministries, including the Ministries of Coal Industry, Ferrous Metallurgy, Nonferrous Metallurgy, etc., were hunting for excavators in Germany. However, very few excavators (especially 1.5-3 cubic meter) were available in the Soviet Zone of Germany, as they had been transferred west by the Germans for building the "Atlantic Wall."

A curious thing happened when the underground ammunition plants F-1 and F-2, near Nordhausen, were being dismantled. About 90 excavators and a number of steam locomotives and cars were found around these plants. Dismantling was done by the Ministry of Internal Affairs and the dismantled equipment was earmarked for use by the First Administration under the Council of Ministers (Administration of Secret Armaments). In 1946, Lopukhov, director of "Glavtsement," was able to ship to the Ministry of Construction Materials Industry 30 excavators and about 2,000 railroad cars and steam locomotives, by using his connections with railroad officials and keeping the MVD major in charge of operations in a state of intoxication. This resulted in an argument in Moscow between Beriya and Kaganovich (the latter was head of the Ministry of Construction Materials Industry at that time). Finally, the excavators had to be returned to the Ministry of Internal Affairs "for more important uses," as Beriya stated.

When the USSR adopted the postwar Five-Year Plan, extensive plans were made for restoring destroyed industrial enterprises and cities and for new construction. Three new construction ministries were created for this purpose; however, the fulfillment of the Five-Year Plan for construction was doubtful because of the shortage of cement.

According to the same Five-Year Plan, cement production was to be increased to 10.5 million tons per year by the end of 1950. However, according to Minister Sosnin, Stalin actually demanded that the output be increased to 13.5 million tons. In spring 1946, the Soviet government elevated the Ministry of Construction Materials Industry to the level of the most important ministries having top priority for supplies of materials, equipment, and personnel. L. M. Kaganovich, member of the Politburo, was appointed head of the ministry and was given special powers to enable him to carry out the plan. All these measures produced results: by using the equipment and materials received from Germany, the total output of the USSR cement industry was raised to 5 million tons a year by the end of 1946. However, to produce this quantity of cement it was necessary to overtax plant facilities to the utmost, with the result that the equipment was worn out. It was estimated that the equipment could not last longer than 6 months and there were no spare parts, as the domestic industry was unable to manufacture them. Consequently, it was decided to enlarge existing plants by adding equipment received from Germany (Novorossiysk plants, Podol'sk plant, Leningrad plant, and others). To relieve the catastrophic situation caused by the lack of spare parts for cement-manufacturing equipment, 500,000 tons of spare parts and 5 million marks' worth of machines and control and measuring instruments were included in the list of reparations to be obtained from Germany in 1947.

Furthermore, to solve the problem of increasing cement production to meet the requirements of the postwar Five-Year Plan, the Soviet government decided to manufacture in Germany from 1946 to 1948 complete equipment for 24 cement plants with a total productivity of 6.5 million tons. These were also to be included in the reparations by Germany.

Therefore, the plan specifying a cement output of 10.5-13.5 million tons was divided as follows: existing plants, 5 million tons; dismantled plants, 2 million tons; and new plants, 6.5 million tons. Incidentally, several of the dismantled plants were located in Manchuria; they had been dismantled immediately after the end of the war with Japan.

To carry out the plan for manufacturing equipment for 24 new cement plants, it was necessary to revise the previous decision to dismantle several machine-building plants in Germany, and dismantling of the following plants was suspended: Krupp-Gruson, Wolfe-Buckau in Magdeburg, and "Polysius" in Dessau.

Furthermore, the foundry of the Krupp-Gruson Plant and the entire steel-casting plant in Riesa were restored and put into operation. The order for the cement plants became the fundamental item in the reparations deliveries by Germany, and its fulfillment was under special government control. The following persons were made responsible in Germany for prompt and successful completion of the order: Koval', Deputy Commander of the Soviet Military Administration of Germany, and Kaganovich's deputy, G. S. Ivanov, who arrived from Moscow in January 1947.

A corporation for heavy machine building, headed by Mityukov, was founded within the structure of the Soviet corporations. The Krupp-Gruson, Wolfe-Buckau, "Polysius," and Riesa plants, as well as a plant manufacturing reductors in Penig (near Chemnitz), were transferred to this corporation, which headed an association of more than 200 plants of the Soviet Zone and 30 plants of the Western Zones.

The order for cement-plant equipment was considered of such importance that Marshal Zhukov, head of the Soviet Military Administration of Germany, issued orders No 70 and 73 dealing with the manufacture of complete equipment for 24 cement plants and the manufacture of spare parts. It was suggested in these orders that "all Soviet and military organizations in the Soviet Zone give every kind of assistance for the completion of the order." In 1947, after the Soviet Corporation for Heavy Machine Building had been organized, it became necessary to issue another order, which was signed by Marshal Sokolovskiy.

In connection with the difficulties encountered in business transactions with the Western Zones of Germany, the chief of the Administration of Foreign Trade was ordered to give top priority to the delivery of metals and parts for cement plants. Since gears and rims for cement kilns, large reductors, fittings, chains, and shaped castings could not be manufactured by the industry remaining in the Soviet Zone of Germany after the plants had been dismantled, the orders for these items were placed in the Western Occupation Zones, mainly in Westphalia. The Western Zones also supplied metal for manufacturing 300-meter cement kilns. However, it was feared that the fulfillment of these orders might be delayed, thus hampering the entire plan.

The completed kilns and other equipment were shipped to a transshipment base in Stettin, where they awaited arrival of other parts ordered from the Western Zones. Kaganovich strictly prohibited partial shipments of equipment to the USSR, calling the practice "Pyatakovshchina," i.e., sabotage, after Pyatakov, the former Deputy People's Commissar of Heavy Industry USSR, who was shot in 1937. Urgent steps were taken to cope with the difficult situation created by the delay in deliveries from the Western Zones. Special agents of German nationality were secretly sent to the Western Zones to expedite completion of the orders. The agents were supplied with large amounts of money and large quantities of sugar, cigarettes, and alcohol. At the same time, negotiations were in progress, through Kaganovich, to allot the sum of 200,000 dollars in foreign currency for placing orders in Czechoslovakia or Belgium, if necessary. Incidentally, Czechoslovakia refused to accept the order in 1947.

The entire order for the equipment of 24 plants was to be filled by mid-1948, to enable the installation of machinery in the plants by the end of 1950, as planned. The dependency on the Western Zones for the supply of metals (they could have been supplied by the Soviet Union) and parts, and the delay in negotiations with Sweden and Switzerland for placing orders for electric motors and other electrical equipment (they were satisfactorily concluded only in March 1947) made the Soviet authorities very nervous. However, despite the fact that the new cement plants were in a blueprint stage of construction, nine of them were assigned locations and code numbers. For instance, the plants for which equipment was being manufactured by the Krupp-

Gruson Plant (15 plants of 300,000-ton capacity each) were designated "K" -- K-1, K-2, K-3, etc. -- while those receiving machinery from "Polysius" were designated "P." The location assignments were as follows: Plant K-1 was planned for Novorossiysk, K-2 for the Donbass, K-3 and K-4 for Magnitogorsk, K-5 for Georgia, P-1 and P-2 for Podol'sk, P-3 for Leningrad, and P-4 for Dneprodzerzhinsk.

Construction of buildings for the new plants (e.g., in Podol'sk) had begun as early as 1946, in accordance with plans submitted by the "Polysius" and Krupp-Gruson plants. It was also proposed to build the plants in Georgia, in the Donbass, and in the Urals (two or three plants).

Until 1947, the progress of the manufacture of equipment in Germany was exceedingly slow. As a result of this delay, Polysius, owner of the Dessau Plant, was the first to be arrested; several other arrests followed. The plants were turned over to the Soviet corporation, and its head, Mityukov, received a special order from the TsK VKP(b) to expedite fulfillment of the orders.

During 1947, it became evident that the equipment for the 24 plants would not be ready on schedule. So far, the equipment had been manufactured only for eight or nine plants instead of the planned 16 plants. This disrupted the plans for the completion of new cement plants.

To study German methods of cement production and to adjust the plans for new plants to be equipped with German machinery to the future plant locations, local raw materials, etc., a special Department of Science and Technology of the Ministry of Construction Materials Industry was formed within the administration of Science and Technology of the Soviet Military Administration of Germany. The department, headed by Professor Vetukhov, consisted of a group of cement specialists sent over from the USSR; it was located in the town of Welten, northwest of Berlin.

A German professor Meyer and some other German specialists were invited to cooperate. Among other types of scientific research, the group studied problems of prolonging the life of cement-kiln linings, devices for automatic control of kiln operations, etc. To encourage the German specialists in their efforts, they were given, in addition to their normal rations, a special monthly ration and a salary. It is interesting to note that these Germans were living in the US and British sectors of Berlin and did not want to move into the Soviet Sector, despite persistent invitations to do so from the Soviet Military Administration of Germany.

Toward the end of 1946, in connection with extensive constructions in the Far East, Minister Kaganovich gave special consideration to the operation of the Far Eastern cement plant. To improve plant operations, Lopukhov, the director of "Glavtsement," was sent there. After introducing some improvements at the plant, Lopukhov left for Moscow. However, he was taken off the train by an MGB officer somewhere near Lake Baykal, by telegraphic order of Kaganovich, and returned to the plant. There were rumors that this was done because it was considered very important to increase the Far East's cement output, as cement was essential for the construction of atomic bomb plants. In connection with the recent political situation in China, which is favorable for the USSR, it may be expected that the 30 cement plants built in Manchuria by the Japanese have already been included in the economic system of the USSR. Deliveries of cement from these 30 plants have undoubtedly improved the supply of this important material in the Soviet Far East.

In conclusion, we may say that production of cement in the USSR is on an immeasurably lower level than in the US, Britain, or prewar Germany. The differences are much greater than in the production of metals and coal. The Soviet government realizes this very well and considers the problem of increasing the production of construction materials, especially of cement, a matter of great importance.

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