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DATA ON USSR EXTRACTIVE INDUSTRIES

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DATA ON USSR EXTRACTIVE INDUSTRIES

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I. CHEMICAL INDUSTRY

General

AUTOMATION IN USSR CHEMICAL INDUSTRY -- Moscow, Byulleten' Tekhniko-Ekonomicheskoy Informatsii, No 2, Feb 57, pp 31-35

One of the major tasks confronting the chemical industry of the Soviet Union in the Sixth Five-Year Plan is the extensive introduction of automation in the production processes.

The chemical industry is the most readily automated branch of the national economy. This is demonstrated by the presence, in the majority of chemical industry branches, of continuous processes and the large-scale nature of production. Furthermore, the chemical industry, owing to the presence of a large number of technical processes which can cause explosions or fire or may be injurious to the health of the workers, requires the very broad application of complex automation.

Automation of the carbonization tower at the Donets Soda Plant increased the production capacity of the tower 14 percent and reduced the cost of production approximately 3-3.5 million rubles a year; automation of the distillation tower at this plant resulted in an annual saving by the distillation station of 2.4 million rubles; automation of the basic aggregates for producing polyethylene at the Okhta Chemical Combine increased their production rate 25 percent and reduced the expenditure of raw materials and electric power 15 percent.

The work on automating the enterprises of the chemical industry began, in general, during the postwar period. In the period 1946-1950, instruments were principally introduced for the automatic control of various technological parameters.

In 1950, the industry began to introduce means for the automatic regulation of technological processes, mainly in the synthetic rubber, soda, and nitrogen industries.

At present, complex automation is being introduced in a number of basic shops of enterprises of these branches of the industry and also in several basic departments of the sulfuric acid and inorganic fertilizer industries and in individual aggregates for other branches of the chemical industry.

However, in the field of automation the chemical industry lags behind the petroleum and metallurgical industries of the USSR and the level of automation of the US chemical industry. In the US the costs of control-measuring instruments and automatics in newly constructed plants amounts to 15-20 percent of total capital investment; comparative costs in the chemical industry of the Soviet Union during the postwar period amounted to only 1-5 percent. However, partial automation has been accomplished and important work on automation of technological processes has been done.

Nitrogen Industry

At the Stalinogorsk Chemical Combine the neutralization and the pre-neutralization (doneytralizatsii) departments in ammonium mitrate production have been automated. Complex automation of this production has been started at the Lisichansk Chemical Combine. The layout and construction of a regulator for the high-pressure separators, the condensation columns for the ammonia synthesis shop, and the scrubbers for the copper-ammonia tailings has been worked out and tested. These regulators are being introduced at the Stalinogorsk Chemical Combine and the Gorlovka Nitrogen Fertilizer Plant. Special automatic gas analyzers, based on depolarized thermal conductometric (termokondukto-metricheskiy), thermochemical, magnetic, infrared absorption, and electrochemical methods of analysis to replace hand methods of analysis in the production of synthetic ammonia, nitric acid, and other products, have been tested and successfully introduced there. The boiler-utilizers in the weak nitric acid shops and other aggregates have been automated.

Sulfuric Acid

In the production of sulfuric acid by the contact method experimental work has been successfully conducted on the automation of the drying-absorption department and the department equipped with the contact equipment (Shelkovo, Krasnouralsk, and Konstantinovka chemical plants). At the Vinnitsa and Konstaninovka plants of Glavkhimprom (Main Administration for Chemical Industry) the process for maintaining the required proportion of nitrogen oxides in the production of tower sulfuric acid has been automated. Experimental work on the automation of furnaces for the burning of pulverized pyrites has been conducted and a system for the automatic regulation of mechanical pyrite furnaces is being worked out. Instruments have been built by the Ural Scientific Research Institute for Chemical Industry for the automatic control of sulfuric acid production: devices for measuring concentration of sulfuric acid, gas analyzers, photoelectric gas colorimeters, etc.

Despite the introduction of these operations the sulfuric acid industry is one which is seriously lagging insofar as automation and the introduction of control-measuring instruments is concerned. Prior to 1950, production was controlled by means of laboratory analysis because automatic equipment for gas analysis was lacking.

According to the directives of the 20th Congress of the CPSU for the Sixth Five-Year Plan, a shop now under construction which will produce sulfuric acid from natural sulfur according to a simple system by the contact method will be completely automated. In this shop the sulfur-melting, furnace, contact apparatus, drying-adsorption, gas-filtering, and heat-exchanger departments will be automated. The whole system will be operated by a dispatcher from a central panel. Complex automation will also be applied in the basic departments for the following operations: furnaces for pulverized roasting, contact apparatuses, and drying-adsorption in two plants; furnaces for pulverized roasting in two plants; and contact apparatuses and drying-adsorption in five plants. As a result of these innovations it is expected that production will increase 10,000 tons a year and savings will amount to about 6 million rubles a year.

Calcined Soda

At the automation laboratory of the Scientific Research Institute for Basic Chemistry a system for the automation of the carbonization and distillation stations (shops) has been developed, tested, and put into operation. Now work is being done on the automation of the lime and soda furnaces. The automation of the carbonization and distillation stations has been completely inaugurated at the Donets Soda Plant and will be introduced at the Slavyansk, Berezniki, Sterlitamak, and other plants.

According to the directives of the 20th Congress of the CPSU concerning the very important complex automation in calcined soda production in the next few years, it is planned to install automatic carbonization machines, 9 distillation stations, and 18 soda furnaces; problems in the creation of the complex automatic production of calcined soda will be solved with the centralized direction of all processes and the creation of a unified plan for plant automation. The introduction of automation will increase the output of calcined soda by 60,000 tons a year and will result in a saving of 4.5 million rubles.

Phosphate Fertilizers

In the production of phosphate fertilizers the problem concerning the automatic control and regulation of the chamber process for the production of pure superphosphate arose in 1948-1949 in connection with the introduction into industry of reaction chambers which operate continuously. As a result of work done by Giprokhim (State Institute for the Planning of Chemical Enterprises), OKBA (Experimental-Design Bureau for Automation), and the Vinnitsa Superphosphate Plant, the process for the continuous production of dilute sulfuric acid of a given concentration and temperature and the process for measuring it for mixing with phosphate raw material, which is done by an automatic measuring hopper, have been automated. To carry out this automation OKBA developed devices for measuring concentration and flow meters for hot 68-percent sulfuric acid, based on a piezometric

method of measuring, special valves, signal devices to indicate the level of the sulfuric acid, and other instruments. This automation layout was further supplemented by the automatic starting and stopping of the process. A 3-year test of the department, which is still not completely automated, has shown the indisputable advantages of automation: the chamber operated smoothly; idle time has been reduced; separation of the chamber superphosphate has been increased one percent, which is equivalent to a 5-percent increase in output with the same expenditure of raw material; and the labor involved in operation has been reduced. The introduction of automation has resulted in an annual saving of 750,000 rubles in costs and 300,000 rubles in wages.

Methods for the control of the consistency and thickness of pulp required for the automation of the production of concentrated fertilizers have been worked out and work has been started on the modernization of measuring hoppers for free-flowing reagents.

In the next few years, the [former] Ministry of Instrument Building and Automatic Equipment and the Ministry of Chemical Industry plan to set up the complex automation of double superphosphate and ammofos production in this branch of the chemical industry. Complex automation will be installed in 20 chambers for the output of simple superphosphate. This will result in a production increase of 217,000 tons of superphosphate a year and a saving of 15 million rubles.

Synthetic Rubber and Synthetic Alcohol

In synthetic rubber and synthetic alcohol production, automation of production processes was begun in the prewar years, but it was restricted to the automatic control of temperature, pressure, and level.

The widespread automation of technological processes was begun in 1947. Automation in the synthetic rubber plants proceeded according to the following stages: the automatic regulation of the various parameters of the technological processes with the proper disposition of instruments; the automatic regulation of the basic parameters of the various aggregates with the installation of automatic control panels near the aggregates, with provision made for enlarged working areas; and the complex automation of processes with the centralization of instruments and panels sufficient in size to direct the operations of large shops.

The synthetic rubber and synthetic alcohol industry is the most automated branch of the chemical industry. In existing plants the basic technological processes which require considerable labor and which are likely to cause injury have been automated.

The following production operations have been automated: the alcohol vaporizer station of the contact separator shop, where no service personnel is now required; contact separation of alcohol in Grum-Grzhemaylo furnaces, where one operator now serves three furnaces (earlier, each furnace required two attendants); adsorption, desorption, distillation, washing, and rectification of divinyl with centralized operation and operation of the control panel in a separate room, whereby the number of operators in the shop is considerably reduced; the ester hydration process; coreless (bessterzhnevaya) polymerization; the process for the production of polyisobutylene; the production of chlorobenzene; etc.

In the production of synthetic alcohol the pyrolysis shop, the separation of gases, the sulfuric acid hydration of ethylene, and the concentration of sulfuric acid have been automated. The basic shops for the production of phenol and acetone have been automated to a considerable degree.

HIGH PRODUCTION COSTS PLAGUE CHEMICAL INDUSTRY -- Moscow, Leninskoye Znamya, 18 Mar 58

Cost reduction was a problem that deserved considerable attention among the chemical industry plants during the first months of 1958. This problem caused considerable difficulties among the plants of Moskovskaya Oblast. Some of the chemical plants of this oblast, including the Orekhovo-Zuyevskiy "Karbolit," Shchelkovo, and Zagorskiy plants, failed to cope with the established task of reducing production costs.

When the reasons for the individual plants' failure to fulfill the plans are analyzed, it becomes clear that here is an instance of shortcomings in planning. The substitution of more expensive raw materials for cheaper varieties influenced the cost of production. The poorly thought-out changes in earlier tie-ins of enterprises with their sources of supply of raw materials led to rises in the cost of rail transport and thus to increases in production costs. For example, the Kuskovo Chemical Plant originally received its raw material from the Lisichansk Chemical Combine. Now this material is transported to the plant from Irkutskaya Oblast. As a result, the cost of a ton of raw material has increased almost 400 rubles. Many more examples of this kind can be cited.

It is hoped that the council of national economy of the oblast will take measures and assist in straightening out the situation in regard to reducing production costs which has arisen in a number of chemical industry enterprises.

NEW CHEMICALS FOR CONSUMER GOODS PRODUCTION -- Moscow, Pravda, 7 Apr 58

Dzerzhinsk is one of the large chemical centers of the USSR. At present, work is proceeding on a large scale in the chemical plants and laboratories of Dzerzhinsk on expanding production and mastering the output of new varieties of synthetic materials required for the production of various kinds of consumer goods.

In 1957, the production of a basic resin "polinak" (polyacrylonitrile) was begun at the Plant "Rulon." This resin serves as the raw material for the manufacture of a new artificial fiber "nitron." In its basic properties nitron approaches those of the so-called polyamide fibers -- caprone, nylon, and perlon -- and in quality surpasses them. In the manufacture of finished products nitron may be used either in combination with natural wool or in its pure state.

[The article continues with a discussion of the various used of nitron in the USSR textile industry.]

The oldest chemical enterprise in Dzerzhinsk, the Chernorechensk Chemical Plant imeni Kalinin, is the first in the country to master the production of urea, an important intermediate for the production of plastics, a number of drugs, artificial precious stones (rubies), etc.

Five years ago, based on work done by the engineers G. M. Strongin, G. N. Zapevalovoy, and others, experiments were begun on producing "porofor," a product used as a cell-forming agent (poroobrazovatel') in the manufacture of microporous rubber. Shoe soles made of this synthetic rubber have a fine appearance, improved elasticity, and great durability. The demand for porofor is increasing.

SHORTCOMINGS IN KAZAKH CHEMICAL INDUSTRY -- Moscow, Izvestiya, 27 Apr 58

All branches of industry, with the exception of chemistry, are developing rapidly in Kazakhstan. Even the wood-processing industry, one that is not typical of Kazakhstan, produces almost twice as much as the chemical industry.

[The complete text of this article criticizing the Ministry of Chemical Industry USSR and the Kazakh chemical industry appears in The Current Digest of the Soviet Press, Vol X, No 17, 4 June 1958, pp 29-30.]

PROGRESS AT YAROSLAVL CHEMICAL PLANTS -- Moscow, Sel'skoye Khozyaystvo, 13 May 58

In Yaroslavl, the city of chemists, plans are under way to increase output and expand the variety of chemical products. At the plants "Svobodnyy Trud," "Pobeda Rabochikh," Industrial Rubber Products, and other enterprises of the chemical industry considerable work is being done on increasing the capacity of available equipment and increasing production areas. At the paint and varnish plants pipes are being laid for the automatic conveyance of raw materials and varnishes from one shop to another. At the Plant "Pobeda Rabochikh" large and technically advanced rotary furnaces and a new pulverizing apparatus have been installed. Work on the automation of production processes is continuing.

The Yaroslavl chemists are creating new types of products. New rubber mixtures and new paints and varnishes have been developed and put into production. The laboratory of the Plant "Pobeda Rabochikh" has developed a number of brightly colored nitrocellulose enamels for light motor vehicles. The Plant "Svobodnyy Trud" has mastered the production of a so-called vanadium catalyst required for the production of varnishes.

Agricultural Chemicals

POTASSIUM SULFATE PRODUCTION LAGS -- Moscow, Promyshlenno-Ekonomisheskaya Gazeta, 13 Apr 58

In an article published in the 26 March 1958 issue of Promyshlenno-Ekonomicheskaya Gazeta, the Ministry of Chemical Industry was criticized for the slow organization of potassium sulfate production at the potassium combines of the Ukraine and for insufficient output of concentrated and liquid fertilizers.

In answer to this article, S. Tikhomirov, Minister of Chemical Industry, has reported that in 1959-1960 it is planned to increase significantly the production of inorganic fertilizers, including concentrated fertilizers, such as superphosphate, ammofos, and others. In 1959, a start will be made on expanding the output of liquid ammoniated fertilizers.

Much work has been done to organize the production of potassium sulfate at the potassium combines of the Ukraine. The All-Union Scientific Research Institute for Halurgy has mastered the technology of production of potassium sulfate fertilizers from the polymineral ores of the Carpathians. In one combine an experimental shop has been constructed. At the same time that the fertilizer is being produced here, plans are being formulated for the production of potassium sulfate in future large combines now in the planning stage.

NEW CHEMICAL FERTILIZERS -- Moscow, Sel'skoye Khozyaystvo, 15 May 58

The production of inorganic fertilizers in the Soviet Union increases uninterruptedly. In 1957, the chemical industry produced 11.7 million tons of fertilizer, or 8 percent more than in 1956. In the first 3 months of 1958, the output of inorganic fertilizer has exceeded that of the same period in 1957 by 7 percent.

Many enterprises of the chemical industry have mastered the production of new highly effective inorganic fertilizers. A large shop for the production of a new variety of phosphorus fertilizer, defluorinated superphosphate, has been put on stream at the Sumi plant. Here all the basic production processes have been mechanized and automated. The output of granulated superphosphate at the Sumi plant has also been expanded. The Dneprodzerzhinsk Nitrogen Fertilizer Plant has begun the production of complex fertilizers containing nitrogen, phosphorus, and potassium. The first experimental consignments have been manufactured. The Kaluga Chemical Combine (Ukraine) has mastered the output of potassium sulfate.

The scientific associates of the Kazan Agricultural Institute have worked out the technology for the production of "pretsipitat," a valuable phosphorus fertilizer made from the wastes of the gelatin plant. The Kazan Artel' imeni Kirov has manufactured several hundred tons of this fertilizer.

The Chemical Institute of the Academy of Sciences Azerbaydzhan SSR, in cooperation with specialists from the Baku Iodine Plant, have worked out the technology for manufacturing boron compounds from bore water. This fertilizer contains up to 6 percent boric anhydride. Tests have shown it to be highly effective. A newly constructed shop of the Stalinogorsk Chemical Combine has begun the manufacture of granulated ammonium nitrate. The Estonian Chemical Combine "Maardu" has mastered the production of a phosphoric mixture consisting of superphosphate and phosphorite flour.

The output of liquid fertilizers has been greatly increased. Plans for 1958 call for the application of ammonia water and liquid ammonia on 225,000 hectares sown to technical crops, such as cotton and sugar beets.

Coke Chemicals and Petrochemicals

CHEMICALS EXTRACTED FROM WASTE PRODUCTS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 19 May 58

In the gas, petroleum, coal, shale, and peat industries a number of valuable types of waste products are obtained in the course of the regular output of products. Among these are impure discharge water, waste gases, and cinders. The employment of these as starting materials for the production of chemical products is one of the most important tasks of the national economy.

Much has been done on the solution of this problem by the scientific workers of Lengiprogas (Leningrad State Institute for the Planning of Enterprises for Artificial Liquid Fuel and Gas) and VNIIPS (All-Union Scientific Research Institute for the Processing of Shales). They, in particular, worked out the plan for the first industrial shop in the USSR for the dephenolization of tar water.

The operation of such a shop at the shale-processing combine at Kokhtla-Yarve has permitted the treatment, during 4 years, of more than one million cubic meters of waste water from which several thousand tons of phenol have been obtained. The cost of this phenol is less than the cost of shale gas.

During the first 3 years of operation, the dephenolization shop gave a return of almost 23 million rubles. Thus, the capital costs of constructing the shop were made up in the first 2 years.

Since the shop has started operations, it has systematically fulfilled the plan for the output of phenols. It is particularly important that the rate of recovery of common phenols from the tar waters is 94-96 percent. This compares with 85 percent for the plant at Belen in East Germany and 80 percent for the Plant imeni Stalin in Czechoslovakia.

A second shop of this kind was constructed at the shale-gas plant in Slantsy.

EXPANSION OF PETROCHEMICALS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 26 Mar 58

In 1958, it has been proposed to expand greatly the synthetic alcohol plant at the Novo-Kuybyshev Refinery. Utilizing the gas of the Novo-Kuybyshev and Kuybyshev refineries, this enterprise will put out, in addition to synthetic alcohol, acetone and phenol, the raw materials for plastics. At the Novo-Kuybyshev refinery the production of synthetic fats to replace edible oils will be organized, and an installation will be put in operation for producing paraxylenes by a thoroughgoing cooling method (paraxylene is the

raw material for the production of high-quality artificial fiber). At the Syzran Refinery a complex installation will be activated which is designed for the production of synthetic alcohol on the basis of processed petroleum gases.

FIRST PRODUCTION OF COUMARONE IN USSR -- Riga, Sovetskaya Latvia, 30 Mar 58

At the Kadiyevskiy Coke-Chemical Plant the first shop in the Soviet Union for the production of coumarone resin is now in operation. Coumarone resin is becoming more and more widely used, both in the USSR and abroad.

Enterprises in Kiev are producing linoleum and Dutch tiles from it. In Japan "permanent tiles" are being made from the resin of the Kadiyevskiy Plant. Furthermore, it is being employed in the rubber and electric cable industry and in the production of paints and varnishes, plastics, and artificial leather.

Until recently, this resin was obtained from a deficient raw material, heavy benzene, which was obtained by the Kadiyevka Plant from the coke-chemical enterprises of the Ukraine. Then the plant laboratory worked out a new method for receiving resin from the production wastes, namely, the neutral fraction of phenol oils (fenol'noye maslo).

Mineral Chemical Products

VALUABLE MINERALS IN SEA OF AZOV -- Moscow, Izvestiya, 6 May 58

The Sivash, a large bay of the Sea of Azov, is a valuable source not only of sodium chloride, but also of many other kinds of compounds.

[Comment: The condensed text of this article on the resources and exploitation of Sivash Bay is included in The Current Digest of the Soviet Press, Vol X, No 18, 11 June 1958, pp 31-32.]

Plastics

INCREASED USE OF NEW PLASTIC -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 4 Apr 58

In recent years, ftoroplast-4 is more and more widely used in industry. This new plastic possesses remarkable properties. In durability it exceeds all other natural and synthetic materials and when in contact with aggressive substances is more stable than gold and platinum. The maximum permissible working temperature of ftoroplast-4 is almost double that of all other kinds of plastics.

Ftoroplast-4 is an irreplaceable electrical insulating material for the production of high-frequency cable. Its nonswelling and nonwetting capacity permits its use under conditions of high moisture. The unusually high chemical strength of the new material makes it particularly suitable, and sometimes indispensable, for the production of washers, gaskets, and other sealing devices. It has great value for a number of items used in the food industry and medicine.

The production of ftoroplast-4 is rather expensive, but it is so economical to use that it pays for itself. This is illustrated by the fact that a regular gasket is worn out in 5-6 days, while one made of ftoroplast-4 lasts for 6 months. The electrical insulating property of this plastic permits a significant increase in the operating temperature of electrical machines and makes it possible to reduce their weight, size, and cost.

However, ftoroplast-4 has shortcomings. The waste, obtained in the production of items from the material, cannot be shaped into a monolithic (homogeneous) mass. Almost 30 percent of the material consists of waste which accumulates as waste piles in the chemical shops in the form of cuttings, turnings, scraps, pieces of film, and cracked parts. Thus, every year, tens of millions of rubles and large quantities of valuable material are lost.

The problem of restoring the waste into monolithic pieces was undertaken by P. Severin, chief of shop of the Novosibirsk Chemical Plant. After many failures, the problem was successfully solved in 1957.

The monolithic billets produced by Severin are somewhat lower in quality than the original material because the cuttings, turnings, scraps, and other waste are contaminated in the supplementary reprocessing. Nevertheless, all the basic qualities of ftoroplast-4 are retained and therefore the regenerated material can be successfully used for the manufacture of new items, in particular those used for sealing.

The Irkutsk Affiliate of Giproneftemash (State Institute for the Planning of Petroleum Machinery) employed gasket rings made of the regenerated material and reported they worked successfully at a pressure of 500 atmospheres in benzene and kerosene for more than 1,000 hours and continued to serve satisfactorily even longer.

Despite the proven effectiveness of the regenerated product, there are long delays in getting it into production.

PRODUCTION PROBLEMS AT LENINGRAD ENTERPRISE -- Moscow, Pravda, 14 Apr 58

Increased demands and production difficulties, particularly raw material shortages, have created problems for the Okhta Chemical Combine.

[A condensed text of this article appears in The Current Digest of the Soviet Press, Vol X, No 15, 28 May 1958, pp 42-43.]

Synthetic and Artificial Fibers

NEW PROGRESS IN USSR SYNTHETIC FIBER PRODUCTION -- Moscow, Pravda, 7 Apr 58

In 1957, production was started on a special resin called polinak (polyacrylonitrile), the raw material for a new synthetic fiber called nitron.

[The condensed text of an article on this and other new developments in the Soviet synthetic fiber industry appears in The Current Digest of the Soviet Press, Vol X, No 14, 14 May 1958, pp 32-33.]

Moscow, Izvestiya, 15 Apr 58

Among new artificial fibers developed by the Soviet chemical industry are enanth and pelargon.

[A condensed text of this article appears in The Current Digest of the Soviet Press, Vol X, No 15, 28 May 1958, p 42.]

II. PETROLEUM AND GAS INDUSTRIES

USSR in General

INCREASES OF 17-20 MILLION TONS PER YEAR EXPECTED IN OIL INDUSTRY -- Moscow, Pravda, 24 Mar 58

V. Kalamkarov, a member of Gosplan USSR, reports that if the USSR oil industry is to reach its projected goal of 350-400 million tons per year in the next 15 years, it must increase output 17-20 million tons each year. Kalamkarov also cites some of the gains made by the industry, among them that less capital investments per ton are required to increase the extraction of petroleum and that the USSR surpassed the US in yearly oil production over the past years.

[Comment: For the complete text of the article, see The Current Digest of the Soviet Press, Vol X, No 12, 30 April 1958, pp 30-31]

ELECTRODRILL TESTED IN MORE THAN 100 WELLS -- Moscow, Byulleten Tekhniko-Ekonomicheskoy Informatsii, No 1, Jan 58, pp 5-6

VNIIburneft' (All-Union Research and Development Institute for Oil and Gas Well Drilling) has developed electrodrill E250/10, which has been tested successfully in oil-well drilling in the Bashkirskaya ASSR and Azerbaydzhan.

The drill is made up of two basic parts: an oil-filled, three-stage asynchronized electric motor and a spindle supported by ball bearings. This type of shaft increases the rated efficiency of the electrodrill, allows more power to be transferred to the bit, and makes drilling more effective. The shaft roller is mounted in the housing on roller bearings; in the lower part, the shaft roller is sealed with an end packer sealer.

In contrast to the turbodrill, the capacity or rotation of the electrodrill does not depend on either the depth of a well or the volume or quality of flushing fluid. Moreover, the electric cable in the pipes makes it possible to regulate the work of the drill in the stope by means of an ammeter mounted on the control panel and to feed the bit automatically.

At present, all of the electrodrill units are equipped with automatic regulators of type BAR1-150.

During tests in the Tuymaza Drilling Trust in the Bashkirskaya ASSR, the drill was used in more than 100 wells totaling 176,000 meters. The drilling indexes improved constantly and reached those with the turbodrill.

The following table gives the technical characteristics of the electrodrill:

Capacity	150 kilowatts
Speed	530 rpm
Rated torque	275 kilogrammeters
Outside diameter	250 millimeters
Length	11.8 meters
Maximum axle load	up to 40 tons

The above institute also developed the MAPI-26/620/8 motor with a capacity of 180 kilowatts and a speed of 670 revolutions per minute, which was tested during the period 1955-1956. The tests indicated that if the speed of the motor is increased from 530 to 670 revolutions per minute, the mechanical speed of drilling becomes much faster and bit penetration is not lost. For this reason, heavier duty motors, of 230 kilowatts and 670 revolutions per minute, are being produced.

The recent tests which were performed with the electrodrill proved favorable. The tests were made while drilling slanted, directional wells with the use of an impulse inclinometer which made it possible to control, without the necessity of pulling the drill pipe, the azimuth (adjustment) and curvature of the well stope and the position of the deviator. The results were also favorable in drilling under complicated conditions with the use of heavier mud solutions with a specific weight of 1.9-2.0 grams per cubic centimeter and more, situations where the turbodrill could not solve the problem or where the rotary drill is not very effective.

SPECIAL DERRICK DEVELOPED FOR DRILLING TWIN-WELLS -- Moscow, Byulleten Tekhniko-Ekonomicheskoy Informatsii, No 1, Jan 58, pp 7-8

Twin-well drilling of oil and gas wells is a practice whereby a drilling crew, using a single drilling unit, can drill simultaneously two slanted holes whose tops are located 1.5 meters apart, whereas the bottoms can be as much as 1,000 meters apart. This type of drilling requires a special derrick for mounting a movable crownblock, two rotors over the wells, and a panel for controlling the crownblock.

Drilling is carried on alternately in both holes. When one pass is completed in the one hole, the tools are pulled, a new bit is mounted and the tools are immediately lowered with the new bit into the second hole. While the second hole is being bored, the first bit is changed and preparations are made to lower the tools again and continue drilling.

Twin-well drilling ensures higher labor productivity, lower drilling costs, and a high coefficient of use of the drilling and power equipment and surface installations or, in the case of offshore operations, the foundations.

When the two holes are finished, the derrick and all of the drilling equipment is removed and another derrick with equipment is set up for extracting the oil.

The Azerbaydzhan Institute for Petroleum Machine Building has designed a pipe-type developmental oil rig VET28 x 75-2 for the normal performance of all types of repairs on the operating twin-wells.

The geometric parameters of the new rig ensure that all the repair work can be performed and that the twin wells can be serviced with two crownblocks in all situations where the well-headed centers are up to 1.7 meters apart.

The new derrick, similar to the tube-type drilling and developmental derricks in use, is an eight-section unit with cross-over framework that can be dismounted. The eight sections make it possible to use the legs and other parts of the developmental tube-type derrick VET75-24, which is series-produced by the Baku Plant imeni Sardarov. Estimates and oil field tests have indicated that the cross-over framework with flexible connecting rods completely ensures the derrick's rigidity and load-carrying capabilities.

The new-type derrick VET28 x 75-2 is produced by the above plant and is successfully used in the Azerbaydzhan oil fields.

The following table gives its technical characteristics:

Weight on hook (tons)	75
Derrick height from lower surface of leg shoes to upper surface of crownblock beams (meters)	27.64
Lower foundation of derrick at leg axis (meters)*	8 by 8
Upper foundation of derrick at leg axis (meters)	2 by 3

Working height of hoist (meters)	9.8
Number of hoists	4
Weight of connector (tons)	11
Full weight of derrick with stairway (tons)	16.27

ELECTRIC CORE SAMPLING UNIT DEVELOPED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Feb 58

Core samples from oil and gas wells are now removed with the semiautomatic station GKS-Z, which is rather outmoded. The operator is constantly overloaded with work. At an average drilling speed of 20 meters per hour, he must take measurements every 4 meters. In addition, he must check for luminescence and determine the physical parameters of the mud solution. The station also has serious defects in design.

A workman from the Nizhvolgoneftegeofizika (Lower Volga Petroleum Geophysics) Trust proposed the design of a new automatic station AGKS-55/57. A similar station had been designed in the USSR before. This station is comprised of several interconnected aggregates and fixtures mounted on a metal frame which is braced in the closed body of the GAZ-63 automobile or in a cab on a tractor sled.

This automatic apparatus was used for the past year in the exploratory sites of Saratovskaya Oblast. Its use has proven its ability to perform much better geochemical research in oil and gas wells than the semiautomatic GKS-3 station. Not only has the work load of the operator been eased, but also the quality of core sampling has improved and core processing has been speeded.

The new station enables a constant sampling of core by electricity. The curves pertaining to the content of hydrocarbon gases are registered simultaneously on a chart through two channels. The notations are registered in percent and in duration of time and there are indications of depth with calculations for delays. The station ensures a chromothermographic analysis of an air-gas mixture up to seven components, from hydrogen to hexane inclusive. The analysis takes 5-6 minutes.

Any delay in the flow of drilling fluid is automatically corrected, and it is possible to determine the actual depth of gas appearances. The station calculates the volume of drilling fluid flowing from the well head. Thus, a drilling crew can determine at any moment the amount of fluid circulation in the well.

The new station has other advantages. Since it has a worm-type, instead of floating-type, degasifier, the drilling fluid is degasified 5-6 times as fast. The gas-air mixture is condensed in a transmitter mounted near the degasifier in the channel near the head of the well. For this reason, the signals which indicate the hydrocarbon content are relayed through the apparatus without delay.

The transmitter of the depth gauge AGKS-55/57 operates from a six-gear transmission of the crownblock. This setup has eliminated the instrument defects which cropped up with the cable system in the GKS-3 station. The operator can mount and remove the equipment much easier and with less danger.

The Designing Bureau of Petroleum Fixture Building has recently designed another electric gas core sampling station which was tested at the Moscow Petroleum Fixture Building Plant. While this plant has the potential to produce these stations on a series basis, production is being delayed.

Geophysical explorers for oil and gas need the new automatic station badly, and they hope that Gosplan RSFSR will take steps to have it produced on a series basis.

OIL FOUND IN MOLDAVIAN SSR -- Moscow, Na Stroitel'stve Truboprovodov, 2 Feb 58

Kishinev -- Geologists have brought in a flowing oil well from a depth of 430 meters near the village of Valeny in the vicinity of Vulkaneshty. The well is producing 3 tons of crude per day. The crude contains a large percentage of light lubricants. The area around Vulkaneshty is now covered with oil derricks.

REFINERY CONSTRUCTION EXPANDED -- Moscow, Stroitel'naya Gazeta, 14 Feb 58

Stalingrad -- One of the largest oil refineries in the USSR is under construction in the southern outskirts of Stalingrad across the Volga-Don Canal. The refinery will obtain its crude oil by pipeline from the Zhirnovskiy Oil Field.

The first part of the refinery has already started operations. The second part, construction of which is now under way, will be comprised of an electric desalting unit, two cracking units, and other aggregates. One of the cracking units is scheduled to begin operations in the first quarter of 1958 and thus the output of motor gasoline will be increased considerably.

Minsk, Sovetskaya Belorussiya, 13 Feb 58

Construction will begin this year of an oil refinery at Polotsk. This enterprise will be one of the largest of its kind in the USSR. It will obtain its crude oil for refining from the oil fields of the Bashkirskaya ASSR and Tatarskaya ASSR. It will produce gasoline, tractor and domestic kerosene, various lube oils, and other petroleum products.

USSR HAS 160 GAS DEPOSITS -- Moscow, Pravda, 7 Feb 58

Prior to 1917, Tsarist Russia had virtually no gas industry. Actually, the Soviet gas industry did not begin to expand until World War II. The discovery and putting on stream of gas deposits near Saratov and the construction of the first long-distance gas line in the USSR from Saratov to Moscow laid the foundation for a new type of fuel industry.

Subsequently, another gas line, from Dashava to Moscow by way of Kiev, was built to add another source of gas supply to Moscow, while Leningrad began to receive oil shale gas from a shale-processing combine in Kokhtla Yarve in Estonia.

Not long ago, the largest gas deposits were considered to be Elshanka and Peschanyy Umet in Saratovskaya Oblast of the RSFSR and Dashava and Opara in Drogobychaskaya Oblast of the Ukraine. Since then, gas deposits with much greater reserves were opened. The reserves at Stavropol' are 25 times as large as those at Elshanka. Gas from Stavropol' is supplied to Moscow and other along-the-way points. Recently, three large gas deposits were opened in Krasnodarskiy Kray, and exploration has revealed reserves as great as those at Stavropol'.

There are also large deposits at Shebelinka in Khar'kovskaya Oblast of the Ukraine and at Stepnovo across the Volga. New sites were discovered on the right side of the Volga at Uritskoye in Saratovskaya Oblast and at Korobki in Stalingradskaya Oblast. In addition, there are large gas deposits at Karadag and Kyanizadag in Azerbaydzhan and near Bukhara in Uzbekistan and very promising indications of gas in the Komi ASSR and Tyumenskaya Oblast.

The USSR now has 160 gas deposits, which will enable it to increase natural gas extraction considerably within the next few years. Extraction and production in 1958 is scheduled to reach 31 billion cubic meters 1.5 times that of 1957. The extraction increase of 11 billion cubic meters will be nearly three times that of the period 1951-1955.

24 WELLS IN STAVROPOL'SKIY KRAY SUPPLY GAS TO MOSCOW -- Moscow, Pravda, 25 Feb 58

Stavropol' -- Stavropol'skiy Kray has one of the largest reserves of natural gas in the USSR.

A new workers' settlement has cropped up in the steppes where the main collecting point is located for the Stavropol'--Moscow gas line. Four more gas wells were connected to this point in January 1958. This brings the total to 24 wells which supply gas to Moscow through the above-mentioned line. Moscow is now obtaining ten times as much gas from Stavropol' as one year ago.

The projected extraction plan for the period 1958-1965 is to increase extraction from 1.8 to 14.5 billion cubic meters per year.

SHEBELINKA FIELD IN UKRAINE TO TRIPLE PRESENT GAS OUTPUT -- Kiev, Pravda Ukrainy, 29 Jan 58

In 1958, gas extraction in the Ukraine is scheduled to reach 10.4 billion cubic meters, 72 percent over the 1957 level. The new Shebelinka field is expected to triple its present yield and extract 5.8 billion cubic meters.

Crude oil extraction in the republic is expected to reach 1.2 million tons, 23 percent more than was extracted in 1957.

OUTER BELT GAS LINE PLANNED AROUND MOSCOW BY 1962 -- Moscow, Na Stroitel'stve Truboprovodov, 9 Feb 58

Moskovskaya Oblast, built up with large industrial centers, sanitoriums, and large cities and settlements totaling more than 4 million residents, has been using Donets Basin coal, petroleum, and large quantities of peat for fuel requirements.

The discovery of new gas deposits in the south has enabled the government to take steps to build a circumferential gas line around Moscow and a gas line from Krasnodarskiy Kray to Serpukhov.

The line from Krasnodarskiy Kray to Serpukhov, by way of Rostov-na-Donu and Voroshilovgrad and 1,000 kilometers long, is to be built from pipe 820 and 1,020 millimeters wide and is to be put into service in the third quarter of 1961.

The circumferential line around Moscow will connect Serpukhov with Voskresenk, Noginsk, Dmitrov, Klin, and Volokolamsk. This line, 400 kilometers long and to be built from pipe 820 millimeters wide, is scheduled to be put into service in 1962. The section from Serpukhov to Noginsk is scheduled to begin operations in the third quarter of 1959. The construction of the circumferential line is to start in 1958.

SIX GAS COMPRESSOR STATIONS TO OPEN IN 1958 -- Moscow, Na Stroitel'stve Truboprovodov, 23 Feb 58

Gas compressor stations are scheduled to go into operation in the third quarter of 1958 at Novo Pskov and in the fourth quarter at Egorlyk, Aksay, Voroshilovgrad, Semiluki, and Shchekino.

LARGE COAL GASIFICATION STATION BUILT AT ANGREN -- Tashkent, Pravda Vostoka, 30 Jan 58

The Angren Underground Coal Gasification Station now under construction is supposed to become the largest of its kind in the USSR. Once it reaches its designed capacity, it will produce 2,320,000,000 cubic meters of gas per year, which is equivalent to the extraction of 635,000 tons of coal.

However, construction has been prolonged for more than 5 years because some supervisors are skeptical about building the station. They do not believe in extracting gas from underground coal on a large scale and have diverted both manpower and materiel and technical resources to other projects. In 1957, only 9.2 million of the allocated 18.2 million rubles was spent, and the yearly plan for construction and assembly operations was fulfilled only 50.8 percent.

Ural-Volga Region

NEW FIELD ADMINISTRATION SET UP TO OPERATE IN BASHKIRIYA -- Moscow, Na Stroitel'stve Truboprovodov, 31 Jan 58

Ufa -- During the period 1956-1957, several new oil deposits -- Arlan, Nikolo-Berezovka, Novo Khazenskoye, Cheraul'skoy, and others -- were opened in northwestern Bashkirskaya ASSR. Oil prospectors have already reached the boundaries of Permskaya Oblast and the Udmurtskaya ASSR.

Particularly large oil pools have been found at Arlan, and this led to the establishment of the Arlanneft' Oil Field Administration in the village of Nikolo-Berezovka, the center of the Krasnokamskiy Rayon. Crude oil deliveries will start soon now that a crude oil line has been built from Kaltasy to Verkhnye Moncharovo.

Central Asia

TURKMEN EXTENDS OPERATIONS TO OFFSHORE AREAS -- Moscow, Trud, 12 Feb 58

Ashkhabad -- The Turkmen oil industry is extending its operations from the Cheleken Peninsula to the offshore areas of the Caspian Sea as the Baku oil workers did earlier.

A derrick will be set up 400 meters from the shore of the peninsula. The first metal piles for the scaffold bridge have already been placed. This bridge will eventually extend nearly 2 kilometers into the Caspian.

An oil field is to be built up out in the sea, where the derricks will be set up on separate foundations 17-20 kilometers from the shore.

Baku is supplying the Cheleken workers with the metal foundations for the offshore bridge. Two heavy-duty power trains have also been delivered to the Cheleken Peninsula.

Drillers from the Groznyy area are aiding the Cheleken workers to drill directional wells near the shore, one of which will deviate 400 kilometers from the shore.

Caucasus

KUBAN RIVER AREA DRILLERS SET WORLD RECORD -- Moscow, Trud, 18 Feb 58

The first flowing oil well in Russia was struck in Krasnodarskiy Kray on the outskirts of the village of Kievskoye in the Kudako River Valley on 16 February 1866.

The Kuban River area in the North Caucasus is one of the oldest oil-producing areas in the country. There is evidence that the area dwellers were extracting crude oil from wells back in 1821 with buckets or, under better circumstances, by means of pumps.

Today, the Kuban oil workers lead in the annual speed of drilling per machine throughout the USSR oil industry. They have even surpassed the US oil-well drillers. The average annual penetration per crew in the US is 14,700 meters. The Kuban drillers surpassed this level in 10 months of 1958. One crew of the Priazovneft' Oil Field Administration drilled 39,187 meters during the year, a world record which formerly belonged to US drillers.

NEW OIL FIELD ADMINISTRATION SET UP IN GROZNYY AREA -- Baku, Bakinskiy Rabochiy, 7 Mar 58

Groznyy -- The Checheno-Ingushskiy Sovnarkhoz has set up a new oil field administration, Sunzhaneft', to work the Karabulak and Achaluk oil deposits, which were opened in the Groznyy region in the past 2 years.

The oil pools at these deposits lie in ancient chalk formation 2,500-3,000 meters deep. So far, 16 gusher wells have been brought in at Karabulak and Achaluk, and they are already producing as much oil as the hundreds of wells at the old oil fields of Groznyy.

The new oil area is a large one, extending 70 kilometers along the Sunzhenskiy Ridge. Developmental drilling is being started this year. Within the next 2-3 years, Groznyy is likely to double its present output and regain some of its past glory as an oil-producing area.

CONSIDERABLE EXPLORATION PLANNED IN DAGESTANSKAYA ASSR -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Feb 58

The Dagestanskaya ASSR has the potential to increase crude oil and gas extraction. Two of its deposits, Seli and Gasha, have gas reserves estimated at about 3 billion cubic meters. Until recently, very little attention was paid to the construction of pipelines, however, and a considerable portion of the petroleum gas was burned in flares.

During the second half of 1957, a 40-kilometer gas line was laid from Seli to the Dagestanskiye Ogni Glass Plant. In 1958, gas lines are scheduled for construction from this plant to Derbent and from Gash to Izberbash.

The Dagestan crude is high-grade crude oil with a considerable content of light fractions and lubricants.

Considering the potential for oil and gas extraction in the area, the Dagestanskiy Sovnarkhoz has taken measures to step up the exploration in the deeper horizons in the Mesozoic formations. Until lately, there had been very little activity in the northern part of the republic. Geological surveys have now revealed several promising structures in this area whose proximity to the large oil and gas deposits in Stavropol'skiy Kray and Astrakhan'skaya Oblast calls for large-scale geological surveys and geophysical operations in the steppes of the republic and for deep exploration at one of the upthrusts which have already been found.

Three exploratory wells designed to open the Mesozoic formations are to be set up in the second half of 1958 in the Karanogayskiy section.

Azerbaydzhan

INDEXES IMPROVE IN ALL BRANCHES OF OIL INDUSTRY -- Baku, Azerbaydzhanskoye Neftyanoye Khozyaystvo, No 11, Nov 57, pp 6-9

The discovery and commercial development of the rich, offshore oil deposits have been very significant in the expansion and in the higher economic indexes of the Azerbaydzhan oil industry. Despite the investment of considerable capital for the construction of offshore installations and the high rate of amortization, petroleum production in the offshore areas is 33-40 percent of that on shore.

The following table compares the economic indexes in oil extraction over the past 3 years:

	1955	1956	1957 (9 mo)
Yearly increase in oil extraction (%)	0.4	1.5	2.6
Yearly increase in gas extraction (%)	19.1	40.7	66.8
Yearly increase in natural gas (%)	268.5	104.9	146.0
Yearly increase in oil extraction from pressuring (1,000 tons)	2017.9	2550.6	2110.0
Ratio of total oil extraction (%)			
Offshore sites	26.5	28.8	30.5
New remote sites (Kyurovdag, Siazan')	2.0	4.4	6.9

	1955	1956	1957 (9 mo)
Ratio of flowing crude oil (%)	18.1	22.1	29.2
Labor productivity (tons of oil and gas per worker; (% of previous year)	5.6	9.0	9.6
Ratio of manpower per well-month (% below previous year)	7.1	4.9	2.3
Cost of extraction of oil and gas (% of previous year)	plus 1.5	minus 5.2	minus 5.8

Labor productivity in oil extraction since 1954 rose 26.2 percent while oil and gas production costs declined 3.6 percent. Lower production costs were achieved because of the increased ratio of flowing production. Average daily extraction from flowing wells, from 1954 through 9 months of 1957, rose 127 percent, and its share in the overall production rose to 29.2 percent from 9.3 percent. Slightly less than 33 percent of the Azerbaydzhan oil production comes from flowing wells.

Until 1956, artificial pressuring accounted for about 7.5 million tons of oil. The yearly increase from artificial pressuring in 1956 was 14.7 times that of 1950. Pressuring accounted for 16.4 percent of the oil extracted in 1956. Of the increase during the year, 38.1 percent came from strata which were pressured.

When pressuring was first started, initial production costs were higher because of the additional money spent on pumping the reagent into the strata, but these costs per ton of crude oil declined 1.8 percent in 1954, 7.6 percent in 1955, and 10.5 percent in 1956.

Developmental drilling costs were also reduced sharply by pressuring. During the period 1952-1956, some 1,660,000 rubles of capital investments were saved in developmental drilling because fewer wells had to be drilled. There was a saving of 59.38 rubles in capital investments on each ton of oil produced in 1956.

Underground repairs comprise a considerable percentage of extraction costs. In 1953, these repairs cost 216.2 million rubles, 15.8 percent of the extraction costs. In 1956, despite a higher number of operating wells, the underground repair costs were reduced to 185.4 million rubles, 13.2 percent of the total extraction costs. They will be reduced again in 1957, when they are expected to be no more than 180-182 million rubles.

Two factors, a longer period between repairs and improvements in deep-well pumps, have contributed to the reduction in repair costs. The average operating life of wells before repairs became necessary was extended from 21.7 days in 1955 to 22.5 days in 1956. Meanwhile, the number of underground repair jobs per well-month decreased from 1.31 to 1.25, or 4.6 percent, and the average cost per repair job declined from 794 rubles in 1955 to 771 rubles in 1956, or 2.9 percent.

Based on the average number of repair jobs performed by a single crew in one month, labor productivity in 1956 was 4.1 percent higher than in 1955. In general, the average time spent on a single repair job declined from 16.5 crew-hours in 1955 to 15.9 crew-hours in 1956, or 3.6 percent

Although well depths became deeper, particularly in exploration, the speed of drilling increased considerably. The following table indicates the changes which occurred in the speed of drilling:

	Developmental Drilling		Exploratory Drilling	
	Meters/ Mach-Mo	Increase in 5-Yr Period (%)	Meters/ Mach-Mo	Increase in 5-Yr Period (%)
1946	543.7	--	183.5	--
1951	822.2	51.0	191.6	4.4
1956	1,044.9	27.1	298.6	56.0

Wells 3,500-4,000 meters deep are now drilled in 9-10 months, 25-30 percent faster than a few years ago.

These faster drilling speeds have resulted from the use of the turbodrill, whose proportion of the over-all drilling was as follows (in percent):

1941	4.7
1946	8.8
1951	27.7
1956	59.9

In 1956, refining volume in Azerbaydzhan rose to 1.5 times that of 1946, whereas the range of withdrawal of light products rose to 47 percent from 36.6 percent in 1946. The cost of one ruble's worth of industrial production, the theoretical index of refining costs, amounted to 97.7 kopecks in 1956, in contrast to 98.4 kopecks in 1955, a reduction of 0.7 percent. Costs were reduced again in 9 months of 1957 by 0.4 percent below the same period of a year earlier.

ERRATA

Two items, published on pages 17 and 22, respectively, in Data on USSR Extractive Industries, No 3, should have appeared as follows:

OIL PRODUCTION COMPARED -- Baku, Bakinskiy Rabochiy, 14 Nov 57

USSR crude oil output during the postwar period 1946-1955 rose nearly 50 million tons. This was 1.9 times the increase in the 20 years before the war.

By 1960, extraction is scheduled to rise 64 million tons, or nearly double the increase made in the period 1951-1955 and 1.3 times that of the 10-year period 1946-1955.

SIGNIFICANCE OF GAS SUPPLY TO MOSCOW INDICATED -- Moscow, Sovetskaya Rossiya, 4 Jan 58

Extraction of natural gas in the RSFSR is now 26 times that of 1940. Natural and petroleum gas is extracted at 129 sites in this republic.

Gas is now supplied to 520,000 apartments, about 900 dining establishments, and hundreds of educational and medical institutions in Moscow. In 1913, it was supplied to only 2,700 apartments.

III. FERROUS METALLURGY

General

FOUNDRIES OF GOR'KIY ECONOMIC ADMINISTRATIVE REGION -- Moscow, Liteynoye Proizvodstvo, No 4, Apr 58, p 1

The sovnarkhoz of the Gor'kiy Economic Administrative Region has considered the improvement of the work of foundries in the region not only from the standpoint of fulfillment of current plans but also with the idea of revealing their reserve powers and working out future actions.

This is one of the largest sovnarkhozes. In it are more than 400 enterprises, in different branches of industry and construction, with 500,000 workers.

The foundries have 65 enterprises, including 36 cast-iron foundries, 10 steel foundries, and 19 nonferrous metal foundries.

However, there is a gap between the output of cast metal and the requirements for it in the industrial enterprises and structures of the region. For example, the 1958 plan for cast iron is being fulfilled only 94 percent, and it is necessary to make up the shortage with castings from Leningrad, Kolomna, Stalingrad, Yaroslavl', and other areas, according to previously arranged cooperation. In analyzing the work of the foundries, the sovnarkhoz noted in many of them an out-of-date technology and poor organization of production. In many of them, the factory space and casting equipment are not being utilized to capacity, for example, "Dvigatel' Revoluyutsii," "Krasnaya Etna," "Teplokhod," and imeni Sverdlov. The amount of casting removed from one cubic meter of the total space of the shops does not exceed 0.6-0.8 ton per year, and output of casting per listed worker per year ranges from 15 to 25 tons. In the Plant imeni Sverdlov it is 17.2 tons, in the Semenov Plant 17.3 tons, in the Plant imeni Vorob'yev 20 tons, and in "Dvigatel' Revolutsii" 16 tons.

In the plants imeni Vorob'yev and "Dvigatel' Revolutsii," among other, labor consumption per ton of cast iron amounts to 60-120 man-hours, and the production cost is 1,800-2,500 rubles. This is caused by poor organization of the working areas, resulting from inadequate mechanization of the main technological processes in the casting industry, including charging and transport of the charging blend among other operations. Even in such an outstanding plant as the Gor'kiy Motor Vehicle, casting production is beginning to lag behind the Moscow and Urals motor vehicle plants in a number of the chief technical-economic indexes. Thus, the production cost of one ton of cast gray iron is 165 rubles higher in the Gor'kiy Motor Vehicle Plant than in the Moscow plant.

The sovnarkhoz also established that the sanitary hygienic conditions of work needed improvement in a number of foundries, particularly reduction of the dust and gas in the air.

It was noted that, in the case of a number of plants, construction-assembly operations for expansion and reconstruction of the foundries were retarded, and thus not only were considerable sums for capital investment incompletely used, but also complex introduction of the new techniques and an increase in the level of mechanization of the foundries were impeded.

The pay scale for leading professions in foundries also needs improvement. At present, the earnings of molders, core makers, and others are no higher than those of less qualified workers in the foundries and workers in the machine shops. This does not stimulate the work of these main smelter personnel.

Attaching great significance to questions of improving the work of foundries and developing further the casting industry of the region, the sovnarkhoz planned a number of measures to assure a considerable increase in casting in the next 3 years. The figures for the increases were 36 percent for cast iron, 30 percent for malleable cast iron, 15 percent for cast steel, and 40 percent for nonferrous casting.

Production

SOME BELORUSSIAN PLANTS LAG IN PRODUCTION OF CAST IRON -- Minsk, Sovetskaya Belorussiya, 11 Mar 58

The Belorussian figures for the February production of cast iron were hardly better than those for January. A number of enterprises under the Administration of Machine Building and Machine-Tool Building failed to cope with their assignments. The administration as a whole fulfilled the February plan for cast iron only 95 percent and for cast steel 116 percent. The motor vehicle and tractor plants also failed in January to fulfill the plan for cast iron.

Data on February plan fulfillment by individual plants for cast iron and cast steel follows (in percent):

Enterprises	Cast Iron	Cast Steel
Minsk Tractor Plant	90	114
Minsk Motor Vehicle Plant	95	120
Gomel' Gomsel'mash	110	--
Minsk Plant imeni Voroshilov	103	--
Minsk Udarnik Plant	84	--
Minsk Bearing Plant No 11	100	100
Orsha Krasnyy Borets Plant	--	96

The situation was somewhat better for cast steel. Enterprises of the Administration of Machine Building and Machine-Tool Building fulfilled the February plan 116 percent and, during January and February, fulfilled the first-quarter-1958 plan 75 percent. The Plant imeni Stalin and the Krasnyy Borets Plant did not fulfill the plan for cast steel.

The February plan fulfillment for production of rolled stock by the Mogilev Metallurgical Plant is characterized by the following figures (in percent):

Type of Rolled Stock	Fulfillment of Plan for Feb 58	Fulfillment of Quarter Plan During Jan-Feb 58
Steel sheet	103	70
Steel plate	105	38
Roofing steel	105	69
Rolled cast iron sheet	105	73

As is seen, the plant exceeded the fulfillment of the plan for steel plate in February and thus overcame the lag which had been tolerated in January. The workers of the enterprise are also coping successfully with such important indexes as yield in gross production per worker. In February, this amounted to 102 percent of the plan.

SCOPE OF MOSKOVSKAYA OBLAST METALLURGICAL INDUSTRY -- Moscow, Leninskoye Znamya, 21 Mar 58

The metallurgical industry of Moskovskaya Oblast has a relatively small place in the total of the USSR. However, the character of the products, the assortment of which is very extensive and complicated, makes it one of the important links in the national economy of the country.

The enterprises of the Administration of the Metallurgical Industry of the Moskovskaya Oblast Sovnarkhoz are preparing high-grade steel of hundreds of different types. They are issued in the form of large and small forged pieces, castings, structural metal, sheet, strip, and wire. The strip and wire are of the most widely different sizes including micron. The electrotechnical, radiotechnical, and instrument-building industries are customers for items of complicated alloys.

Enterprises of the Administration of the Metallurgical Industry made the following pledges for 1958: delivery of above-plan production in the amount of 70 million rubles, including steel, 5,000 tons; rolled stock, 4,000 tons; aluminum and lead alloys, 1,400 tons; and delomites, 4,000 tons. The results for January and February show that these pledges are, in the main, being fulfilled.

ORE TRUST DELIVERS ABOVE-PLAN ORE -- Kiev, Pravda Ukrainy, 23 Mar 58

Workers of the Dzerzhinsk Ore Trust have already delivered 39,700 tons of above-plan iron ore in March 1958, and the Yuzhnyy Mining and Concentrating Combine has supplied 21,700 tons of concentrate [presumably above plan]. Miners of the Nikopol' Manganese Trust are continuing to increase the speed of their operations.

MAGNITKA METALLURGISTS MAKE PLEDGES -- Moscow, Sovetskaya Rossiya, 3 Apr 58

Metallurgists of Magnitka have pledged to complete the annual plan ahead of schedule for the 3d year of the Sixth Five-Year Plan and to deliver above plan 15,000 tons of pig iron, 30,000 tons of steel, and 20,000 tons of rolled stock, and 100,000 tons of iron ore and the same amount of agglomerate.

Construction

CONSTRUCTION STATUS REPORT ON NEW IRON ORE MINES -- Moscow, Stroitel'naya Gazeta, 18 Apr 58

Constructors of iron ore enterprises in the USSR are supposed to increase iron ore production capacities by 16,120,000 tons during 1958. In the table which follows, 11 mines which are under construction are listed. The table gives the construction plan status as of 1 April. The

March construction plan was not fulfilled in the case of 5 mines out of 11, and for one mine the annual plan was fulfilled only 5 percent during the entire first quarter, and for the second unit of another mine the figure was only 2.5 percent.

Mining Enterprises	Total Estimated Cost (in million rubles	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	March	No of Days Before Start of Operation
Pit "3-ya Magnitka," Sverdlovskiy Sovnarkhoz	4.5*	4.5	40	100.5	183
Abakanskiy Mine, Kuznetsk Metallurgical Combine	31.23	6.05*	33.5	140	275
Sokolovsk-Sarbay Combine, Kustanayskiy Sovnarkhoz	116.3	110.1	32	100	249
Yuzhno-Korobkovskiy Mine, Kursk Magnetic Anomaly, Belgorodskiy Sovnarkhoz	84.7	39.7	20.5	103	236
Krivoy Rog Mine "Kamenistaya," Dnepropetrovskiy Sovnarkhoz	24.1*	16*	19.8	111.5	275
Sheregeshskiy Mine, Kuznetsk Metallurgical Combine	8.3	2.9*	14.7	54	275
Tashtagol Mine, Kuznetsk Metallurgical Combine	5.8	4.9*	13.2	78	275
Shalym Mine, Kuznetsk Metallurgical Combine	1.47	0.63*	11.8*	200	275
Krivoy Rog Mine Yuzhnaya," Dnepropetrovskiy Sovnarkhoz	23.3	11.5*	10.4	82.3	275

Mining Enterprises	Total Estimated Cost (in million rubles)	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	Plan Fulfillment (%) March	No of Days Before Start of Operation
Atasuskiy Mine, Karagandinskiy Sovnarkhoz	26.3*	10.7*	5*	80	183
Chernomorskiy Mine, second unit, Khersonskiy Sovnarkhoz	22.3	8.8	2.5	35	260

*Figures revised after review of planned volume of contract construction and assembly work

ROLLING MILL CONSTRUCTION STATUS REPORT -- Moscow, Stroitel'naya Gazeta, 23 Apr 58

At the beginning of the second quarter of 1958, a serious lag was apparent in USSR rolling-mill construction. The table below lists seven rolling mills scheduled for construction in 1958. The March construction plan was fulfilled for only one of these installations, and in the case of two others, construction and assembly work has not even been started. Most of the groups of construction workers also failed to fulfill the January and February plans. The table gives the construction status of the rolling mills as of 1 April 1958.

Rolling Mills	Total Estimated Cost (in million rubles)	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	Plan Fulfillment (%) March	No of Days Before Start of Operation
Nizhniy Tagil "650" rolling mill	124	80	23.2	105.6	264
Krivoy Rog continuous billet mill	50.9	19	17.4	63.3	32
Cherepovets blooming mill	83.65	70	13.4	68.5	275

Rolling Mills	Total Estimated Cost (in million rubles)	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	March	No of Days Before Start of Operation
Asha sheet mill	45.8	32.5	12.4	80	249
Magnitogorsk slab mill	128	70.8	8.9	90	249
Krivoy Rog light section mill No 2	65.7	--	--	--	250
Dneprodzerzhinsk rolling mill for deformed sections	17.5	--	--	--	250

CONSTRUCTION STATUS REPORT ON NEW COKE BATTERIES -- Moscow, Stroitel'naya Gazeta, 27 Apr 58

Construction on the nine new USSR coke batteries is continuing. Only a very small percent of the annual construction plan was completed during the first quarter in the case of five of them, and the March plan was fulfilled only in the case of Magnitogorsk battery No 11. Yasinovka battery No 5 should already be in operation, but it has been delayed by the failure of the Leningrad Cable Plant to fill its orders. The following table gives the construction status as of 1 April 1958.

Battery	Total Estimated Cost (in million rubles)	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	March	No of Days Before Start of Operation
Yasinovka No 5, Stalinskiy Sovnarkhoz	51.1	15	57	52.7	Overdue
Voroshilovskaya No 3, Luganskiy Sovnarkhoz	33.8	21.4*	50.3	19.1	91

Battery	Total Estimated Cost (in million rubles)	1958 Costs (in million rubles)	Plan Fulfillment (%) Annual	March	No of Days Before Start of Operation
Bagleyskaya No 7, Dnepropetrovskiy Sovnarkhoz	61.6*	33.6*	17.2	62.5	153
Magnitogorsk No 11, Chelyabinskiy Sovnarkhoz	100	77.1	17.6	100	220
Cherepovets No 4, Vologodskiy Sovnarkhoz	29.5	17.2	6.1	53.2	275
Voroshilovskaya No 4, Luganskiy Sovnarkhoz	18.7	17.6*	5.42	1.65	183
Bagleyskaya No 8, Dnepropetrovskiy Sovnarkhoz	25.6*	23.4*	4*	**	224
Novolipetsk No 4	122.5	112.5	2.7	1.1	275
Yasinovka No 6, Stalinskiy Sovnarkhoz	66.3	50.2	0.8	77.2	275

*Date revised

**No quota for first quarter; actually work costing 100,000 rubles was completed in March and work costing 950,000 rubles in the first quarter.

NEW TYPES OF STEEL FOR OIL TANKS -- Moscow, Byulleten' Tekhniko-Ekonomicheskoy Informatsii, No 3, Mar 57, p 14

Dimensions for metal oil tanks and the material for preparing them must be chosen with particular care to assure dependable service, especially in areas where the temperature goes down to -50 degrees.

A safe temperature, depending on pressure, for using different types of sheet tank steel has been established by the welding laboratory of VNIIStroyneft' (All-Union Scientific Research Institute for Contruction in the Petroleum and Gas Industry) in collaboration with the chair of materials management of the Moscow Petroleum Institute imeni Gubkin, and a noncritical steel has been recommended, the use of which will assure dependable service of tanks in areas with long periods of below-freezing temperatures.

It has been established that the main factor complicating the performance of tanks while in use is the utilization of steel which becomes brittle at low temperatures. The primary disintegration is observed in the basic metal near the welded seams or directly in the welded seams. If the steel is in a brittle state, then disintegration develops quickly along the entire height of the body of the container. If the steel is ductile, the development of a crack is limited to small sections.

Five types of steel were studied: Bessemer steel, type BSt-3, used for the construction of riveted tanks; low-carbon, open-hearth, rimmed steel MSt-3, used until 1951 for constructing welded tanks; low-carbon, open-hearth, killed steel type MSt-3, from which oil tanks are constructed at present; open-hearth steel type MSt-3 with the improved deoxidization practice, proposed for tank construction by VNIIStroyneft' and supplied according to ChMTU (Ferrous Metallurgy Technical Specifications) 5232-55; and low-alloy manganese steel proposed by the Central Scientific Research Institute of Ferrous Metallurgy (experimental-industrial batch smelted according to ChMTU 5057-55).

Detailed study of these steels by existing methods for quality comparison and also by a method for quantity evaluation worked out by the authors of this article indicated that the use in tank construction of steels of type BSt-3 and MSt-3 rimmed and also MSt-3 with special deoxidation does not assure the dependable service of the structures in winter time. Thus, at a pressure of approximately 12 kilograms per square millimeter, observed in tanks with a capacity of over 2,000 cubic meters when they are completely full, Bessemer steel BSt-3 may crack even at a plus temperature, MSt-3 rimmed steel at about 0 degrees, and killed steel with special deoxidation at a temperature of -25 degrees.

Use of the new types of steel MSt-3 with improved deoxidation according to ChMTU 5232-55 and low-alloy manganese steel according to ChMTU 5057-55 will assure dependable performance of tanks with a capacity of 5,000 cubic meters at a temperature of -50 degrees when the tank is filled to the very top. The cost of MSt-3 steel with improved deoxidation is no higher than that of the formerly-used killed steel type MSt-3.

Results of tests of properties of improved killed steel, carried out for plants and contractors (Magnitogorsk Metallurgical Combine and Makeyevka and Voroshilov metallurgical plants) in VNIIStroyneft' and SMU (Construction and Installation Administration) No 9 of Trust No 7 of the Ministry of Construction of Enterprises of the Petroleum Industry verified the expediency of using this steel for tanks. Metallurgical plants have smelted and rolled more than 25,000 tons of steel into sheets for oil tanks. At present, this steel is being supplied in mass amounts, according to the continuously operating ChMTU 5232-55, for the entire program of tank construction of the Ministry of Construction of Enterprises of the Petroleum Industry.

NEW TYPE COKE OVEN TO BE TRIED OUT -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 21 Mar 58

A coke oven of a new type in which the air and gas are heated not in regenerators but in recuperators was designed by Lecturer Khalabuzar, Candidate in Technical Sciences. Other things being equal, such a direct-flow coke oven is 17 percent more productive than the existing ones. However, years have passed and this improved aggregate has not yet been introduced into production.

Newspaper correspondence on the subject was examined in the ferrous metallurgy section of Gosplan USSR, and the reply was made that the working out of the plan for the construction of experimental coke ovens of the Khalabuzar design was included in the work program of Giprokoks (state Institute for the Design and Planning of Enterprises of the Coke-Chemical Industries) and would be carried out in the third quarter of 1958. The date for finishing the working designs (chertezhey) would be fixed with (pri) the examination of the plan.

SUCCESSFUL METHOD DEVISED FOR DESULFURIZING PIG IRON -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 4 Apr 58

Sulfur is the plague of ferrous metallurgy. It impairs the mechanical properties of the metal, lowers its plasticity, and gives it a hot brittleness. In forging and rolling steel with a high sulfur content, cracks appear in semifinished products and in finished items. The harmful influence of sulfur makes necessary careful desulfurization of the metal. The modern level of blast-furnace and open-hearth production permits the output of low-sulfur metal but great difficulties are involved.

In smelting pig iron, coke appears to be the chief source of sulfur. Even a slight variation in the sulfur content leads to an increase in the consumption of this critical metallurgical fuel and a decrease in the productivity of the furnaces.

The fight against sulfur must be carried out in all stages of metallurgical production -- agglomeration and coking, as well as others. However, it is not effective in all stages. This gave rise rise to the idea of separating the sulfur from the metal outside of the smelting aggregates, i.e., desulfurization of the pig iron outside of the blast furnace. This is possible because the chemical and physical properties of pig iron make it considerably easier to desulfurize than steel.

In addition to improving the quality of the metal, desulfurization outside the blast furnace increases the productivity of the blast-furnaces and lowers the consumption of coke, limestone, and manganese ore.. The process of blast furnace smelting is considerably simplified, and production costs of pig iron are decreased.

The idea of desulfurizing pig iron outside of the blast furnace is being developed in two directions. Cheap and effective desulfurizers are being sought, and methods are being developed to assure the obtaining of low-sulfur, high-grade metal. There are many methods of desulfurizing pig iron, but not one of them has been used on a broad scale industrially. An essential fault inherent is all known methods is that they do not assure good intermixing of the metal with the desulfurizer; the contact time between them is limited.

Desulfurizing pig iron with solid lime in rotary furnaces seems to be the method with the best prospects. This method has been tested by the Institute of Metallurgy of the Academy of Sciences USSR in collaboration with workers of the Novo-Lipetsk Metallurgical Plant.

The experiments were carried out in two furnaces with a capacity of 1 1/2 and 3 tons. One of these was lined with chamotte brick 65 millimeters thick and the other with chrome-magnesite of the same thickness. For insulation, sheet asbestos 10 millimeters thick and porous chamotte brick 65 millimeters thick were used. The total thickness of the lining was about 140 millimeters. The furnaces operated at two speeds of rotation -- 42 and 72 revolutions per minute -- which corresponded to a peripheral speed of ratation of 2.5 and 4.4 meters per second, respectively.

Before desulfurizing, the lining of the furnace was heated by a jet burner to 1,100-1,200 degrees. When the temperature of the lining of the furnace reached 900-1,000 degrees, the desulfurizer, lime, was loaded in the furnace and heated 40-60 minutes. During this time, the lime actually went through a secondary roasting. To create a reducing atmosphere in

the furnace, coke fines sized 1-3 or 1-5 millimeters were loaded into it for several minutes before filling it up with pig iron (under oxidizing conditions, lime is a poor desulfurizer and, without reduction, desulfurization of the pig iron is impossible). Then the pig iron is loaded into the furnace, and the openings in it are tightly closed with covers so that the air of the atmosphere does not get inside. The furnace is rotated for 2-15 minutes.

After completion of the desulfurization, the pig iron from the rotary furnace goes either to a converter for conversion to Bessemer steel or directly to the foundry.

The chemical content of the pig iron does not exercise a decisive influence on the process of desulfurization. Pig irons with a high silicon and phosphorus content and pig irons with a low silicon and manganese content are easily desulfurized by such a method.

The success of the process depends largely on the fluidity of the metal. The greater this is, the better the mixing proceeds and the more quickly the sulfur is separated from the pig iron. In desulfurizing in a rotary furnace, one succeeds in avoiding negative effects inherent in other methods. Increase in the intensity of mixing the pig iron with the desulfurizer shortens the desulfurization process, and in 2-4 minutes up to 50-70 percent of the sulfur is removed from the pig iron. With a peripheral speed of the furnace of 4.4 meters per second, the sulfur content of the pig iron is lowered in 5 minutes from 0.08-0.1 to 0.01-0.02 percent. However, this speed is far from the best. If it is raised to 5-6 meters per second, it will be possible to reduce desulfurizing time to 2-3 minutes, and, in this case, 90 percent of the sulfur will be removed from the pig iron.

Plants, Combines, Mines, Deposits

FINANCIAL DIFFICULTIES IMPEDE NOVO-LIPETSK PLANT CONSTRUCTION -- Moscow, Stroitel'naya Gazeta, 14 May 58

On 29 March 1958, N. D. Malinenko, deputy chairman of the Lipetskiy Sovnarkhoz, approved the third variant this year of the title list of the Novo-Lipetsk Metallurgical Plant. The economic significance of this event is characterized by the figures 650 million rubles and 332 million rubles. The first figure represents the annual plan for capital investment for the entire Lipetsk Economic Administrative Region. The second figure is the annual plan for capital investment for the Novo-Lipetsk Metallurgical Plant, and this is more than one half the entire allotment for the economic region.

The construction of this plant has been underway not one or 2 but 10 years. The enterprise, already in operation, has funished its products to the state for a number of years, but it does not yet have a completed technological cycle. The shops and complexes have been built one by one. The plant utilizes imported slabs for the hot rolling shop, but its production is far from that provided for in its planned quota.

The sovnarkhoz decided to construct and deliver the electric steel smelting shop this year at a cost of something over 60 million rubles, but according to the title list, a total of 47,250,000 rubles was released for this project. How can a shop be put in operation if its allotment is 13 million rubles less than the requirements for its estimated costs?

Along with the electric steel foundry, the start of the construction of blast furnace No 3 is recorded on the first page of the title list. In this connection, one million rubles is released. The next item is the agglomerating factory. Its complete estimated cost is 39.5 million rubles. It is planned to put the factory in operation in 1959. According to the title list, 4 million rubles is allotted for this factory, including 3 million rubles for construction-assembly work.

The cold rolling shop is mentioned in the same title list with a total estimated cost of 201 million rubles. According to the title list for 1958, 5 million rubles is released for this shop. From the point of view of economic expediency, it would be more reasonable either to plan a great volume of work on the cold rolling shop in 1958 or to do nothing at all.

In 1952, the construction of the repair-machine shop was started with a total estimated cost of 19 million rubles. During 6 years, 7 million rubles was appropriated. Completion of the construction of the shop would permit the output on the spot of nonstandard parts necessary during assembly work. However, during 1958, a total of 3 million rubles was released for this, and this amount does not assure, in any measure, even a partial operation of the shop.

Another shop, or more accurately, complex, is coke battery No 4. The construction and start of operations of the coke battery of the Novo-Lipetsk Metallurgical Plant were approved by a special government decree. Without coke there is no normal cycle in ferrous metallurgy. The necessary volume of construction-assembly work for this coke battery in 1958 in fixed at a cost price of 83 million rubles, but the sovnarkhoz has allotted a total of only 50.5 million rubles for coke battery No 4.

NEW AGGLOMERATING COMBINE IN OPERATION -- Moscow, Izvestiya, 30 Mar 58

Recently, the Lebyazhinskiy Agglomerating Combine was put in operation. This is the third mining enterprise for the preparation of concentrated blast furnace raw material at the Nizhne-Tagil Metallurgical Combine.

NEW METALLURGICAL FACILITIES IN THE URALS -- Moscow, Sovetskaya Rossiya, 16 Mar 58

Workers of the Tagilstroy Trust have put the Lebyazhinskiy Agglomerating Combine in operation. The Nizhne-Tagil blast furnaces have received the first hundreds of tons of prepared raw materials from the new combine.

A new completely automatized blast furnace has been blown in at the Serov Metallurgical Combine. In 1958, two agglomerating belts will start operating in the Serov and Goroblagodatskiy combines. A large iron mine is being constructed in Kushva. In the Pervoural'sk New Pipe Plant, a shop for making especially thin-walled pipe will be put in operation.

EQUIPMENT FOR KRIVOY ROG BLAST FURNACE NO 4 -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Mar 58

The Krivoy Rog Komsomol blast furnace No 4 will be the largest in the southern part of the USSR. It will be equipped with 10-cubic-meter skips to unload the charge, 100-ton scoops for transporting the pig iron, and slag conveyers with 16.5-cubic-meter capacities. The gas pressure at the top will be raised to 1.5 atmospheres. A rotor type car dumper will be set up in the stockyard of the furnace.

BAKU PLANT TO EXPAND -- Baku, Bakinskiy Rabochiy, 4 Mar 58

In 1959, the Baku Pipe-Rolling Plant will put in operation a second "250" pipe-rolling mill. The construction of new open-hearth furnaces is also planned.

NEW EQUIPMENT AT ORSK-KHALILOVO COMBINE -- Moscow, Sovetskaya Rossiya, 27 Mar 58

On 26 March, the first open-hearth furnace of eight planned was put in operation in the Orsk-Khalilovo Metallurgical Combine. At 1100 hours in the morning the first steel was delivered. Smelting proceeded normally.

Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 30 Mar 58

Constructors of the second Komsomol blast furnace of the Orsk-Khalilovo Metallurgical Combine completed the assembly of the first blast heater one month ahead of schedule.

COMBINE TARDY IN DELIVERING METAL -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 28 Mar 58

Magnitogorsk Metallurgical Combine is the supplier of metal for many thousands of enterprises. Complaints of lack of promptness in the delivery of metal are often lodged against the combine. Just in the past year, the combine had to pay fines of more than 12 million rubles in this matter.

In many cases the delays in fulfillment of orders were caused by internal disorders.

NEW MINE IN KERCH' IRON ORE DEPOSIT -- Baku, Bakinskiy Rabochiy, 2 Apr 58

On 31 March 1958, the large new Chernomorskiy mine was put in operation in the Kerch' iron ore deposit. The first unit of the new mine will deliver 1.5 million tons of ore per year.

After a well-attended meeting in honor of the start in operations of the new mine, the first trainload of ore was dispatched to the concentrating factory.

SOME SPECIFICATIONS OF ORES OF KURSK MAGNETIC ANOMALY -- Moscow, Pravda, 3 Apr 58

Little more than one tenth of the area covered by the Kursk Magnetic Anomaly has been explored in detail. The remaining part of it is opened up only by sparse, solitary boreholes.

The ores from deposits in the Kursk Magnetic Anomaly are on the whole of very high quality. A great part of the ore from the Belgorodskiy area meets the requirements not only of blast furnaces, but also open-hearth furnaces. The average iron content of these ores exceeds 60 percent. They contain little silica, which distinguishes them favorably from the ores of the Krivoy Rog Basin.

The ores of the Belgorodskiy area lie at an average depth of 500 meters beneath a layer of friable sedimentary rock with some watery levels and can be worked only by the underground method. The iron ores of the Lebedinskoye, Mikhaylovskoye, Kurbakinskoye, and a number of other deposits can be worked by the open-pit method and, in the central part of the Mikhaylovskoye deposit, without preliminary drying of the pit.

RICH IRON DEPOSIT DISCOVERED NEAR ANGARA RIVER -- Moscow, Leninskoye Znamya, 22 Mar 58

In the region of the Angara River, ore has been discovered which is 50 percent pure iron. It does not need to be concentrated but can be directly smelted in blast furnaces. Nowhere in the world does ore like this occur in such great quantities.

Scrap Metal

CONTINUED EMPHASIS ON IMPORTANCE OF SCRAP METAL -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 7 Mar 58

About one half of all the steel which is smelted in the USSR comes from ferrous scrap metal. In this connection, it is extremely important to supply steel-smelting shops continuously with scrap metal.

The USSR has tremendous reserves of scrap metal. One of the large sources, coming from industry and agriculture, consists in particular of worn out equipment which from year to year is replaced by new apparatuses.

However, many directors of economic organizations underestimate the value of scrap and do not fulfill the plan for supplying it to steel smelting shops. During 2 months of 1958, metallurgical plants have failed to receive more than 300,000 tons of ferrous scrap metal. For example, in February, the Kuznetsk Metallurgical Combine failed to receive 15,000 tons of scrap, the Nizhne-Tagil Combine, 10,000 tons, and the Vyksa and Kulebaki plants, 7,000 tons.

Sovnarkhozes, for example, the Kemerovskiy, Permskiy, Vologodskiy, and Irkutskiy sovnarkhozes, are not conducting the collection and shipment of scrap effectively. The ministries of transport construction and railways are also failing to do their part. During 2 months, the Southeastern, the Volga, the Moscow-Kursk-Donbass, and the Kazan' railway systems have failed to deliver about 14,000 tons of metal scrap, although one of them, the Moscow-Kursk-Donbass Railway System alone, would have been able to deliver 15,000 tons of metal scrap for resemelting from unsuitable rails, metal sleepers, etc.

SCRAP METAL RICHER IN IRON THAN HIGH-GRADE ORE -- Moscow, Sovetskaya Rossiya, 5 Apr 58

Ore containing 40-50 percent iron is considered rich. In scrap metal there is almost 100 percent pure metal. From 10 tons of scrap metal it is possible to obtain enough steel for three GAZ-51 or two ZIS-150 motor vehicles. Almost one half of all the steel in the USSR is obtained from ferrous metal scrap.

Organizations of Rosglavvtormet (RSFSR Main Administration for Scrap Metal) provided about 12 million tons of scrap metal in 1957. More than one third of this was sent to plants in an unprepared state. Such scrap leads to an overconsumption of fuel and lengthens the process of charging the furnaces and decreases their productivity. Steel smelting can be increased 5-7 percent if enterprises of Rosglavvtormet are supplied with powerful presses capable of reprocessing all scrap metal.

Miscellaneous

SVERDLOVSK PLANT DESIGNS LARGEST BLAST FURNACE -- Moscow, Sovetskaya Rossiya, 30 Mar 58

The design offices of the Sverdlovsk Uralmash Plant have begun the design of the largest blast furnace in the world. The US has a blast furnace with a volume of 1,815 cubic meters and considers this to be the largest. The volume of the new Soviet furnace will be 2,286 cubic meters. It will deliver about 3,000 tons of metal in 24 hours. The equipment for the furnace is being designed by A. Olenev, I. Beyzer, M. Plotnikov, and other skilled designers.

NEW HIGH-CAPACITY ROLLING MILL FOR USSR -- Kiev, Pravda Ukrainy, 14 Feb 58

Rolling mill "2500" for continuous hot rolling is one of the largest rolling mills in the world. It will roll twice as much thin sheet in a year as Zaporozhstal'. The new rolling mill is intended for rolling a strip 1.5-12 millimeters in thickness and 2,350 millimeters wide. American rolling mills roll narrower strips at a speed of 11.7 meters per second, but this machine is considerably faster.

Rolling mill "2500" has another advantage over the American machine. In the train of the mill, a reel of the most modern design is set up for winding 12-millimeter strip into rolls. The entire process from the feeding of slabs into the heating furnace to the delivery of strip in rolls is mechanized and automatized. Actually, rolling mill "2500" is by its nature a rolling plant. It will be placed in a building about 700 meters long.

PLANNING AND DESIGNING OFFICE SPECIALISTS DESIGN BLAST FURNACE DEVICES -- Kiev, Pravda Ukrainy, 29 Mar 58

The Dnepropetrovsk Affiliate of the Central Planning and Designing Office is the only organization in the Ukraine which takes an interest in the automatization of mechanisms in metallurgical plants and mining enterprises. It has competent specialists who have made designs of automatic regulation and control installations for the majority of blast furnaces in the USSR.

IV. NONFERROUS METALLURGY

General

NONFERROUS INDUSTRY NEEDS FURTHER BOOSTING TO MEET INDUSTRIAL REQUIREMENTS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 12 Mar 58

During the past years, the nonferrous metallurgical ore-mining industry has been successfully developing. The level of techniques and production technology in mining operations have improved. About 50 percent of the ore is extracted by the open-pit method. However, the level of the ore-mining economy still fails to meet the increased requirements of the industry. To a great extent, this is because the machine-building industry is not issuing enough suitable mining machinery and is not creating enough new highly productive mining and transport equipment. In particular, it is producing few powerful rock excavators, electric locomotives, dump cars, and automatic dump trucks with a load capacity of 25-40 tons for open-pit operations. It is also slow in creating power-operated equipment for underground operations, especially excavators and bulldozers, drilling aggregates, and other highly productive machinery.

In addition, many mining enterprises which have highly productive machinery use it most unsatisfactorily. As an example, at the Noril'sk Mining and Metallurgical Combine and the Zhdanov Ore Administration excavators and drilling machines are utilized not more than 45 percent of calendar time.

The enterprises of the Magadanskiy Sovnarkhoz have good prospects for developing open-pit mining, but the directors of the sovnarkhoz are not taking the necessary measures for speeding up the conversion from the underground method to dredging and open-pit operations.

By directives of the 20th Congress of the CPSU, the extensive use of improved methods of ore concentration is planned. Some of these methods have already been introduced into production. For example, the Leninogorsk Concentrating Factory has introduced a method of collective flotation of sulfides of copper, zinc, and lead, with a subsequent selective flotation of the concentrate. This has permitted lowering the total cost of processing ore more than 20 percent, and at the same time, it has increased the productivity of the crushing department almost 25 percent.

However, the Krasnoural'sk and Kirovograd concentrating factories of the Urals are too slow in introducing selective flotation of copper-zinc ores. Up to now, the progressive method of concentrating ores in heavy suspension solutions has not been used extensively enough, particularly in the Zolotushinsk and Sadon ore administrations.

The introduction in concentrating factories of stage crushing and flotation in processing copper-zinc, lead-zinc, and copper-nickel ores and also selective flotation of copper-zinc ores of the Urals will permit extraction of 5-8 percent more metal in the concentrate. By this means, additional metal to the value of 76 million rubles per year may be obtained.

In 1957, the construction of an installation for roasting alumina in a fluidized bed was proposed in the Ural Aluminum Plant and an installation for sintering a nepheline charge was proposed for the Volkhov Aluminum Plant. However, construction has not yet begun on these installations.

Important tasks face the aluminum industry. In the first place, technological processes for obtaining alumina must be improved. Continuously operating processes must be introduced more quickly to replace the present batch processes.

Conversion to the continuous process of lixiviation, desiliconization, and decomposition in the production of alumina would increase labor productivity 50 percent and assure a saving of at least 500,000 tons of steam per year.

KOLA PENINSULA RICH IN MINERAL WEALTH -- Moscow, Sovetskaya Rossiya, 4 Mar 58

It is difficult to find a branch of the USSR industry where the mineral wealth of the Kola Peninsula is not utilized. Thus the apatite-nepheline industry of Murmanskaya Oblast furnishes more than three fourths of all the raw materials for phosphorus fertilizers of the USSR and the copper-nickel enterprises supply more than one third of all the nickel. The oblast supplies the northwest metallurgical industry with iron ore. The mineral resources of the Kola Peninsula have the most widespread use in the chemical, radio, and electrical industries; in the smelting of rare metals; and in the most varied branches of the new techniques.

During the past 10 years, about 100 large deposits have been explored and reveal in their contents more than three fourths of all known chemical elements. Murmanskaya Oblast is unique in the world in the degree of concentration of useful minerals.

The tremendous explored supplies of mineral raw materials and the developed industry open up great possibilities for further and more intensive exploitation of the wealth of the Kola Peninsula. However, there is a great gap between the discovered resources of mineral raw materials and the rate of their industrial exploitation. At present, the only useful mineral deposits being worked are the apatite-nepheline ores of the Khibiny Mountains, the iron ores of Mt Olen'ya, the nickel ore deposits of Monche and Pechenga, and the Yena-Kovdor micas. Rare elements are also worked on a small scale. But in these deposits the scope of mining is much less than the potential possibilities of the ore base. The extraction of ore by the Apatite Combine has not amounted to more than 5 percent of explored resources during 30 years.

Production

EAST KAZAKHSTAN ENTERPRISES FULFILL PLAN FOR NONFERROUS METALS -- Moscow, Tsvetn'yye Metally, No 3, Mar 58, p 6

With the reconstruction of the Administration of Industry and Construction, the nonferrous metallurgical industry of the Vostochno-Kazakhstanskiy Sovnarkhoz is rapidly increasing the rate of production of nonferrous metals.

Thus, in 1957, the plan for extracting polymetallic ore was fulfilled 105 percent, a production increase of 9 percent over 1956. The plan for smelting lead, zinc, copper, and cadmium, for the production of sulfuric acid, and for tin and tungsten concentrates was considerably exceeded.

On the whole, the nonferrous industry of the economic administrative region fulfilled the 1957 plan for gross production 102.8 percent, a 12.4 percent production increase over 1956. Labor productivity was 4.7 percent higher than called for by the plan. Savings from reducing costs of production amounted to tens of millions of rubles.

In the second half of 1957, all enterprises fulfilled the monthly production plans even though in the first half year there were many cases of nonfulfillment. In the second half year, increase in ore extraction amounted to 16 percent over the first half year and increase in the total smelting of lead, zinc, copper, and cadmium was 6 percent over the first half year.

MEDNOGORSK COMBINE TO INCREASE TYPES OF PRODUCTION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 2 Apr 58

In the Mednogorsk Copper-Sulfur Combine, it has been decided to install an apparatus for the extraction of dispersed metals from pyrite raw materials. Construction of the pyrometallurgical department is being completed where the mechanisms for the rotary furnace will be tested. When the new shop starts operating, the combine will put out five to six types of products instead of two as at present.

Technology

NEW METHOD FOR SMELTING LEAD AGGLOMERATE -- Moscow, Pravda, 25 Mar 58

Producers and scientists have successfully conducted experiments in the Leninogorsk Polymetallic Combine on smelting lead agglomerate in a high-power electric furnace. The experiments have demonstrated the advantage of this method over existing methods of processing lead raw materials. However, the new method has still not been introduced on an industrial scale.

ALUMINUM INDUSTRY TO RAISE ALREADY HIGH PRODUCTION INDEXES -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 23 Mar 58

The technical-economic indexes of the USSR aluminum industry are higher than for other countries. This is the result of daring, creative prospecting. Creating and mastering an improved technology of the electrolysis of aluminum and continually increasing the ampere load (density of current) on the basis of the introduction of acid electrolytes, scientists and workers of the plants have uncovered enormous reserves. During the past 5 years, capacities in plants have increased almost 20 percent. Labor productivity has also increased considerably and production costs have been lowered.

Nevertheless, all the reserves of aluminum production are far from being developed. Acceleration of the technological processes together with increase in new capacities seems as before the most important task of workers of the aluminum industry. It has been estimated that improvement in technology will permit another 20-percent increase in aluminum output in the next years.

Plants, Combines, Mines, Deposits

PLANT TAKES MEASURES TO CURTAIL LOSSES IN COPPER -- Alma-Ata, Kazakhstanskaya Pravda, 3 Apr 58

In 1957 alone, the Dzhezkazgan Copper Plant incurred losses in copper amounting to more than 3,000 tons. At present, effective measures are being taken to combat losses in metal. A second concentrating factory is being constructed there, the capacity of the electric power center is being increased, and the repair-machine shop and other auxiliary services are being expanded. Efforts are under way to curtail and simplify the administrative apparatus.

AZERBAYDZHAN ALUMINUM PLANT CAPACITY TO BE INCREASED -- Baku, Bakinskiy Rabochiy, 4 Mar 58

The construction of the Kirovabad Alumina Plant and the Zaglik Alunite Mine within the Azerbaydzhan SSR will create a raw material base within the republic for the Sumgait Aluminum Plant and lead to a considerable increase in its capacity.

VOLKHOZ PLANT OBTAINS ALUMINA FROM NEPHELINE -- Moscow, Nauka i Zhizn', No 4, Apr 57, pp 14, 16

The Volkhoz Aluminum Plant was assigned the task of provessing nepheline obtained from the Kola Peninsula, where it was a waste product in the production of apatite from nepheline-apatite ores. When this waste nepheline is processed, a nepheline concentrate is formed which contains 30 percent alumina, 20 percent sodium oxide, 43 percent silica, and 7 percent other compounds.

The Volkhov Aluminum Plant has already delivered hundreds of thousands of tons of alumina and soda products and more than one million tons of Portland cement. Recently, the plant was able to extract from nepheline another element, the rare metal gallium, which is required for various instruments and for the semiconductor industry.

The experiment in processing nepheline in the Volkhoz Plant has shown that the cost of producing alumina from nepheline is approximately the same as the cost of producing it from bauxites.

LARGE NEW ALUMINUM PLANT FOR KRASNOYARSK -- Budapest, Kohaszati Lapok, No 1, Jan 58, p 41

An aluminum plant being built in Krasnoyarsk will be the largest aluminum factory in the world. Its 232 factory buildings will be constructed on 172 hectares of land. Seventeen of the buildings will be electrolysis mills. Manufacture will be as mechanized as possible and this will reduce production costs about 25 percent. The raw material base for the plant is about 80 kilometers distant in the Gortshaya mountains.

STALINGRAD PLANT TO PRODUCE ALUMINUM BY 7 NOVEMBER 1958 -- Moscow, Stroitel'naya Gazeta, 14 May 58

The buildings of the Stalingrad Aluminum Plant rise on extensive grounds on the outskirts of the city of Stalingrad. This is one of the largest aluminum plants in the USSR. It should be delivering its first aluminum by the 41st anniversary of the October Revolution.

FERROALLOYS PLANT PUTS NEW SHOP IN OPERATION -- Tbilisi, Zarya Vostoka, 16 Mar 58

Workers of the Zestafoni Ferroalloys Plant have fulfilled the obligations which they assumed in honor of elections to the Supreme Soviet USSR. They completed their 2-month quota 111 percent. Late in the evening of 14 March, they put electrolytic manganese shop No 3 in operation and delivered its first production.

Workers of plant shop No 1 in particular distinguished themselves by delivering 940 tons of above-plan ferroalloys in 2 months.

KUZNETSK PLANT HAS NEW UP-TO-DATE FURNACE -- Moscow, Pravda, 16 Mar 58

A new furnace has been put in operation in the Kuznetsk Ferroalloys Plant. It is equipped with all modern domestic fittings and apparatus. All processes of the furnace are completely mechanized and automatized.

COPPER-MOLYBDENUM COMBINE ACQUIRES NEW PRODUCTION FACILITIES -- Yerevan, Kommunist, 14 Mar 58

The Kadzharan Copper-Molybdenum Combine, one of the largest of the quickly growing enterprises of the Armenian SSR, began to produce in 1952. In a short time, four workers' settlements were established here. Every year, several tens of millions of rubles is spent here just for capital construction.

During the first days of 1958, a new ore chute was put in operation and joined the open pit with the underground mine, facilitating the transport of ore. The automatic machines which were formerly used were set free to be moved to other sections.

In 1957, the average monthly pay of V. Akopyan, operator of an automatic machine, was 3,900 rubles. During the past 4 years, the mine has received a great amount of equipment, as a result of which almost all operations are mechanized. In 1957, labor productivity increased to 1.5 that of 1954 and wages by 35 percent over 1954. Hundreds of miners receive 3,000-4,000 rubles per month. The average wages for a worker in the mine were about 1,500 rubles in 1957.

ARMENIAN MINING ENTERPRISE EXPANDS -- Yerevan, Kommunist, 17 Mar 58

The small railroad station Akhtala lies sheltered in a deep gorge of the Debed River. Above it tower craggy mountains stretching out to the north and northwest of Armenia. These mountains, which are covered with thick bushes, hold within their depths valuable minerals such as zinc, lead, copper, barite, sulfur pyrite, and cadmium.

Even in antiquity, people mined and smelted copper ore here, but from the end of the 19th Century, French concessionaires took possession of the mines. In 1950, an independent enterprise, the Akhtala Exploratory and Exploitation Mine Field was established. However, exploratory work conducted in those first years by geologists did not yield positive results. It was only when the boreholes and exploratory tunnels cut deeper levels of the deposit that they revealed large ore bodies, and the first thousands of tons of rich polymetallic ore were brought above ground.

Recently, miners of Akhtala have discussed the future development of their enterprise. It is planned to reconstruct the underground workings, to work out a new method for opening up ore bodies, and to unite the deep Shamlug tunnel with the Akhtala mine so as to increase ore production by 1963 to five times that of 1958. A large concentrating factory will be built to process this ore. The factory will have two independent lines, one for concentrating copper ore and the other for copper-lead ore. It will also produce barite concentrate.

GEOLOGIST DISCOVERS IMPORTANT METAL DEPOSITS -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 30 Mar 58

The name of 70-year-old geologist Iosif Leont'yevich Rudnitskiy, a Stalin Prize winner, is well known in the southern Urals. The opening up of enormous deposits of iron-chromium-nickel ore from which the Orsk-Khalilovo Combine now receives natural alloy metal is connected with his work. He also discovered the Blyavinskoye copper ore deposit where the large Mednogorsk Combine has been constructed. In 1935, Rudnitskiy discovered the Akkermanovskoye nickel deposit.

NEW TITANIUM DEPOSITS BEING EXPLOITED -- Kiev, Pravda Ukrainy, 14 Mar 58

At the Irsha River, exploitation of new titanium deposits has begun: the Irmanskoye, Stremigorodskoye, and Lemninskoye deposits. At the same time, construction of a mining and concentrating combine is being started.

LARGE BAUXITE DEPOSIT EXPLORED -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 7 Mar 58

A large deposit of low-grade bauxite has been explored in the Buryat-Mongol'skaya ASSR. It is located 300 kilometers from the railroad; from a geographic-economic standpoint it will be difficult to develop and thus cannot be an object for industrial exploitation in the near future. It is also impossible to look on the small deposits of bauxite of the Yeniseyskiy ridge as an independent raw material base for an aluminum plant, and for this reason, the nepheline-syenite in many areas of Krasnoyarskiy Kray and Irkutskaya Oblast are undoubtedly an important source of raw materials. The explored nepheline-syenite deposits in the southern part of Krasnoyarskiy Kray will completely supply the requirements of the aluminum combine planned here.

NEW GOLD DEPOSITS DISCOVERED IN KRASNOYARSKIY KRAY -- Moscow, Gudok, 5 Jan 58

Several new gold deposits have been discovered in Krasnoyarskiy Kray. In summer, a group of geologists under the leadership of N. F. Gavrilov found indications of a gold deposit near the settlement of Severo-Yeniseysk. In August, a polymetallic deposit was discovered which contained 12 metals, including gold, silver, copper, and zinc. Veins of gold were also found in the Ordzhonikidzevskiy area.

DIAMOND OUTPUT OF YAKUTSKAYA ASSR EXCEEDS THAT OF URALS -- Moscow, Nauka i Zhizn', No 4, Apr 57, p 19

At present, several diamond regions occur in the western part of the Yakutskaya ASSR. It is estimated that these contain many tens of placer deposits and 40 kimberlite pipes. The pipe richest in diamonds, called Mir pipe, was discovered on the right bank of the southern section of the Vilyuy River basin. Recently, the largest diamond in the USSR, named the Yubileynyy and weighting 32 carats, was discovered here.

According to directives of the 20th Congress of the CPSU for the Sixth Five-Year Plan, the workers were directed to carry out preparatory work for creating a diamond-mining industry in the Yakutskaya ASSR. The Amakinskaya expedition of the Ministry of Geology and Conservation of Mineral Resources, which was working in this area, pledged to accelerate geological-exploratory and scientific-research work. Two settlements, Mirnyy and Novyy, soon sprang up in the region. During 9 months' time, the increase in explored reserves exceeded the plan 46 percent. Simultaneously with the geological exploratory work, diamond mining was organized. For August and September alone, six to seven times as many diamonds were mined here as for the entire year in the Urals.

V. COAL INDUSTRY

General

UNDERGROUND TRANSPORT -- Moscow, Mekhanizatsiya Trudoyemkikh i Tyazhelykh Rabot, No 3, Mar 58, p 22

In USSR mines the level of mechanization of underground transport in main horizontal workings, according to ton-kilometers attained, rose from 29.6 percent in 1932 to 100 percent in 1956. At the end of 1957, 93.7 percent of the freight was hauled by electric locomotive, in comparison with 66.9 percent in 1940.

The coal mines have seven times as many electric locomotives and more than four times as many mine cars as in the prewar period. Although the capacity of operating mine cars is 1,000 tons daily, only 715 tons of this capacity was used in the USSR coal industry in 1956, in comparison with 360 in 1940. The figure for the Donbass was 904 tons in 1956, in comparison with 350 in 1940.

Shunting work in USSR mines was more than 90 percent mechanized on 1 January 1957.

In recent years, there has been a considerable improvement in the types of batteries and charging equipment used in underground transport. Acid batteries have been replaced by the more powerful and longer-lasting alkali iron-nickel batteries. Sealed metal mercury rectifiers are now being used as battery-charging equipment.

The high level of mechanization of transport and the uninterrupted growth of underground haulage has made necessary the broad introduction of dispatching controls. Five hundred mines now have such services.

Eighteen percent of the personnel involved in coal extraction are occupied in underground transport. There are 172 men involved in underground transport per 1,000 tons of daily output, a drop of only 9 percent from the 1941 level.

Production

PRODUCTION PROBLEMS IN KIRGIZ SSR -- Frunze, Sovetskaya Kirgiziya, 23 Mar 58

In the last 2 years, the plan goals for Kirgiz miners have been exceeded 0.6 percent, labor productivity has increased 9.8 percent, and the production cost of coal has dropped 8.19 rubles per ton. However, 1957 was an exceptionally difficult year for the miners. Fulfillment of the state plan for coal output was made possible only through the practical aid given to the Kirgizugol' Trust by the Central Committee of the Communist Party of Kirgizia, the Council of Ministers Kirgiz SSR, and the Kirgiz Sovnarkhoz.

Among the basic reasons for the lag, particularly in 1957, were the unsatisfactory progress of preparatory work in a number of mines and failure to plan tasks. There were also many shortcomings in work organization; many workers did not fulfill the development norms.

There are many serious shortcomings in the work of the Kirgizugol' Trust. However, neither the republic Gosplan nor the sovnarkhoz give the necessary attention to the coal industry. Mine construction is very slow and allotments for construction are insufficient. Furthermore, the Dzhal and Komsomol'skaya mines are already out of operation, but no plans have been made for the operation of new mines. The construction of a hydraulic mine at Tash-Kumyr and of eight mines in Sary-Bulak was begun, but there is a shortage of money. It is now necessary to concentrate efforts on at least one mine in order to bring it into operation more rapidly.

The Kirgizugol' Trust also has shortcomings in the mechanization of labor-consuming processes. The trust will not be able to realize a profit unless it is equipped with excavators, dump trucks, Donbass combines, TU-2 steam locomotives, and automatic controls. It will experience a loss in 1958.

The trust does not have electric transmission lines. In 1957 an appeal was made to Gosplan USSR, Gosplan Kirgiz SSR, the Kirgiz Sovnarkhoz, and Kirenergo (Kirgiz Regional Power Administration), together with a request for the inauguration of planning for the construction of such lines, but no replies have been received. No provision has been made in the 1958 construction plan for meeting any of the trust's needs for construction.

The question of establishing a Kirgizugol' Combine has arisen as a result of the planned development of the coal deposits in northern Kirgizia. The combine would be directly subordinate to the sovnarkhoz as an enterprise of heavy industry. The trust cannot satisfactorily manage the republic's coal industry because it has insufficient personnel.

EAST SIBERIA RESERVES AND PRODUCTION -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 7 Mar 58

According to calculations of a joint committee, the geological deposits of coal in East Siberia are 6,713,000,000 tons at up to 1,800 meters in depth, 5.5 billion tons at up to 1,200 meters, 3.3 billion tons at up to 600 meters, and 1,913,000,000 tons at up to 300 meters. These figures include only those seams of coal which have a thickness in excess of 0.4 meter for bituminous coal and 0.5 meter for brown coal, with an ash content not exceeding 50 percent. A considerable portion of the seams lie near the surface and can be exploited by the open-pit method.

These reserves, at present, are being very poorly exploited. In 1956, only 28.8 million tons of coal was extracted in East Siberia, whereas the planned annual production capacity of the area mines and pits is 100 million tons.

More than 6 million tons of coal deposits have been prepared for industrial use within the limits of the Krasnoyarskiy Economic Region. These guarantee the construction of 45 mines and pits with a total planned production capacity of 70 million tons a year.

The capacities of existing mines and pits are not being sufficiently utilized. The planned production capacity of Open Pit No 2 Nazarovskiy of the Kanskugol' Trust is 4 million tons a year; in 1956 it produced 1,739,000 tons. Open Pit No 3 Khramtsovskiy of the Cheremkhovugol' Trust has a planned production capacity of 1.2 million tons, but in 1956 produced only 560,000 tons of coal.

NEW DONBASS COMBINE RECORD -- Moscow, Izvestiya, 2 Apr 58

A new world record for Donbass combine productivity has been realized in Mine No 37 in Karaganda. In March 1958, the combine extracted 31,050 tons of coal while developing a 360-meter face in the Shestfutovyy seam.

Technology

WEST DONBASS MINE TO BE AUTOMATIZED -- Kiev, Pravda Ukrainy, 9 Mar 58

The Yuzhgiproshakht Institute in Khar'kov has developed designs for a new type of mine with a planned annual production capacity of 6 million tons. Its construction is to begin in 1958 in the West Donbass.

The mine will have the most up-to-date equipment, remote control of production processes, and a television screen for checking on work at the face. All operations from extraction to transport in each stope will be automatized.

Construction and Investment

1957 RESULTS, 1958 PLANS -- Moscow, Shakhtnoye Stroitel'stvo, No 1, Jan 58, p 1

In 1957, the plan for capital construction in the coal industry as a whole was exceeded 2 percent; capital construction increased 17.9 percent over 1956. In 1957, the increase in capacity resulting from the operation of new mines exceeded that of 1956 by 24 percent. However, the plan for putting new mines into operation was not fulfilled because of serious shortcomings in the organization of mine enterprise construction. These include tardy delivery of materials and labor forces to mines and pits on which construction is to begin. In addition, some projects required considerably more work than was called for by the plan.

The success achieved in putting new mines in operation was due chiefly to the rapid construction of 35 additional mines in the Donbass with the aid of Komsomol members. The shorter construction period was the result of better work organization, which permitted a shorter preparatory period and less time between the tunneling of shafts and the tunneling of horizontal workings.

The experience of the Komsomol builders should be introduced into the construction of larger mines. This will permit a considerably better approximation of the period for beginning the tunneling of horizontal workings, with a subsequent shortening of the construction period.

In 1957, vertical shafts were tunneled by contracting construction organizations at an average monthly rate of 30 meters. This included 40 meters for the Donbass, where the Stalinshakhtoprokhodka (Stalino Mine Tunneling) Trust attained 50 meters. The increase over 1956 figures was attained by using improved tunneling techniques and improved work organization on the basis of further specialization of the mine construction organizations.

In 1957, a number of Donbass mines used the new technique of tunneling vertical shafts with permanent head-frames, using permanent hoisting machines and reinforcement of the shaft while tunneling is under way. The basic advantage of this system is that only the minimum period of time is required for the conversion from tunneling vertical shafts to tunneling horizontal workings.

The increased rate of tunneling vertical shafts has also been the result of increased use of prefabricated reinforced concrete supports.

The 1958 plan for capital work for the coal industry as a whole is somewhat higher than the 1957 plan. However, a more significant increase has been set for several republics and oblasts, i.e., 22.5 percent for the Kazakh SSR, 19 percent for the Uzbek SSR, and 17 percent for Kemerovskaya Oblast.

The volume of USSR mine construction will be 12 percent greater in 1958 than in 1957. It will rise 52 percent in the Kazakh SSR and 275 percent in the Ukrainian SSR. The increase in capacity resulting from the operation of new mines and open pits must exceed that of 1957 by 10.5 percent. Twenty-one open pits with a total production capacity of 44.3 million tons will be under construction; mines and open pits with a total production capacity of 9 million tons are scheduled to begin operation.

In 1958, approximately 900 million rubles must be expended on the reconstruction of operating mines. This includes 400 million rubles to be expended in the Donbass, 1.8 times the 1957 expenditure. The volume of work on the construction of concentration plants will be doubled.

The 1958 plan also provides for further increases in housing construction. Almost 2.9 million square meters of housing space, 27 percent more than in 1957, will go into use in 1958.

CONSTRUCTION IN THE KIRGIZ SSR -- Frunze, Sovetskaya Kirgiziya, 9 Mar 58

The Dzhin-Dzhigan mine, under construction northeast of Kyzyl-Kiya, has a planned production capacity of 450,000 tons a year. In addition to wide use of combines, all output from the face will be transported by conveyer belts and there will be automation and remote control of all processes. A railroad and a motor vehicle road are being laid, and housing and a social and cultural center are being built for the miners.

Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 9 Mar 58

Almost 100 million rubles has been allotted in 1958 for the construction of new coal enterprises in Kirgizia. Mine Sary-Bulak is being prepared for mining operations in Tash-Kumyr. Under construction in the area is the first mine in Central Asia to use the hydraulic method of coal extraction. Its planned production capacity is 750,000 tons per year.

New mines are under construction at Kyzyl-Kiya and Sulyukta. The second mechanized pit in Kirgizia will be erected on the Almalyk deposit in Oshskaya Oblast. The first open pit in north Kirgizia will produce 3 million tons of coal a year.

Prospecting

NEW COAL BASIN -- Moscow, Komsomol'skaya Pravda, 5 Mar 58

A new coal basin is being developed in Dauria, near the city of Borzya in Chitinskaya Oblast. An open pit with a planned daily production capacity of up to 5,000 tons is under construction in the basin, which has many coal seams.

Moscow, Trud, 15 Mar 58

According to information of surveyors, the coal deposits in Kalmutskaya Autonomous Oblast lie at a depth of 2,000 meters.

IRKUTSKAYA OBLAST COAL RESERVES -- Perspektivy Razvitiye Irkutskoy Oblasti (Prospects for the Development of Irkutskaya Oblast), book by E. M. Kudzi, Irkutsk, 1956, pp 93-96, 130

The coal-bearing area of Irkutskaya Oblast covers 35,000 square kilometers. The seams are up to 6 or 8 meters thick and lie near the surface; they are almost horizontal. There are up to 10 million tons of coal to be found in one square kilometer of area. This is not the case in other coal areas in the USSR.

The basin has favorable geological and hydrogeological mining conditions.

Cheremkhovo coal costs less than two thirds as much as Donbass and Mosbass coal, whereas labor productivity is twice that of these two basins.

The Irkutsk coal region is located in the southwestern part of the Siberian platform and extends along the East Siberian Railroad for almost 400 kilometers. The coal, of the Jurassic period, is of the long-flame type. Its yield of volatile materials is 40-50 percent.

The Ust'Ordynskiy, Zabituyskiy, Vladimirskiy, and other deposits have some gas-caking coal.

Irkutsk coal is of great importance to the development of ferrous metallurgy. While the coal cannot be used alone, it can be mixed with other coal to obtain metallurgical coke and to further the development of the coke chemical industry.

In 1960, coal output in Irkutskaya will be over 80 percent greater than that of 1955. In 1955, the average daily output of the Cheremkhovugol' Trust rose to 5,000 tons.

The Sixth Five-Year Plan calls for the construction of new mines, modernization of mining techniques, mechanization of production processes, and construction of concentration plants at Open Pit Safronovskiy and Open Pits No 1 and 2 Khramtsovskiy.

VI. OTHER SOLID FUELS

Shale Production

ESTONIAN SHALE INDUSTRY -- Moscow, Promyshlenno-Ekonomicheskaya Gazeta, 2 Mar 58

The process of extracting shale mechanically in the Estonian Shale industry has been unsatisfactory; 80 percent of the work is done manually. This is because the former Ministry of Coal Industry USSR, which had the basic shale-producing mines under its jurisdiction, endeavored blindly to use coal-extraction methods in shale-producing mines. Such important factors as the difference between shale and coal strata were not considered.

For a number of years, machines developed for coal extraction have been used in the shale industry. Sometimes these attempts have met with success but in most cases they have been unsuccessful, because complicated technical problems cannot be solved by amateurs without the participation of the appropriate scientific organization. After the creation of the sovnarkhoz in Estonia, a radical change in this connection was expected, but there is still no research center concerned with shale extraction in Estonia. The management of the Estonslanets Trust, striving to prove that research is being conducted, states that there is an underground laboratory at the fourth section of Mine No 2.

However, this section has been working under disadvantages. In addition to the complicated tasks before them, section personnel had to extract as much as the sections working exclusively on production. This had a negative effect on its production, as well as on the quality of experimentation. Although this error has now been corrected, it had previously been decided in the trust that the section had done its part.

According to plans, the V-7 cutter-loader machine should operate in the trust. However, it has been out of operation and there is nothing to replace it. Furthermore, the trust is ignoring the reports of the test section supervisors that the plans developed for roof control did not work out as expected.

The O-5s machine is being used in the test section, but it is not quite suitable for work in shale mines. Several parts need strengthening and the producing plant is aware of this. However, trust applications for 1958 provide for the delivery of the O-5s, which is intended for use in coal, not shale.

At one time, the Tallin Machine Building Plant served the shale industry well. However, other orders have increased its work load and although their importance is doubtful, departmental habits persist and the orders are filled. It is time that the Tallin plant was made the machine building base of the republic shale industry.

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