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SOVIET CHEMICAL INDUSTRY

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USSR Industrial Development

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This serial publication contains translations of selected articles on chemical industry in the Soviet Union, on the specific subjects indicated in the table of contents. Complete bibliographic information accompanies each article.

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MODERNIZE LABORATORY EQUIPMENT AT THE RESEARCH INSTITUTE OF SYNTHETIC RUBBER

[Following is a translation of an article by A. Zernov in the Russian-language newspaper Leningradskaya Pravda, Leningrad, 5 Jan 63.]

To the unsophisticated mind rubber is associated with automobile tires. Of course, it is. But only with tires? What about hoses, inner tubes, shock absorbers? Insulation? The applications of rubber are indeed countless.

At the VNIISK (All-Union Scientific Research Institute of Synthetic Rubber) we were shown the "tears of wood" which can be processed into a floating bubble -- the rival of cork lifesaving belts, lasting shoe soles, and even a putty capable of "patching up" steel. Of course, this refers not to natural but to artificial gums, developed by Soviet chemists.

Still, it is tires that matter most.

The institute bears the name of Academician S. V. Lebedev -- the founder of the industrial synthesis of rubber in the USSR.

Thirty-five years ago the selfless labor of Academician Lebedev led to the first major advance. From then on the Soviet chemists have been making steady progress and new advances. But now the Party imposes a new, glorious task on the Soviet chemists -- the complete elimination of the need to import caoutchouc from abroad. The VNIISK has already developed the new synthetic rubber SK-1, which completely replaces natural rubber. But they are still writing about the SK-1 that "soon it will be produced in large quantities.... Its large-scale industrial production will be organized in the immediate future."

Although it is far more pleasant to describe successes, we will now speak of losses. Where is time being lost? And why is it being lost? Why is it that where months are sufficient a half-year is expended, and where one year is sufficient two years are expended?

At the laboratories of the VNIISK Butlerov is remembered. There was Butlerov; he initiated and developed new methods and he saw far into the future. We give him credit for this. But still that had been at the end of the last century, whereas now we are living in the age of the atom. Would this father of the chemistry of high-molecular compounds have been as satisfied now if he had known that at present the level of laboratory equipment at such an outstanding institution as the VNIISK has hardly changed at all since its inception. This is being openly mentioned by eminent scientists. After all, it is the test tubes, the flasks, and the retorts that remain the principal tools of the chemist. Of course, they are beyond reproach. They are needed. But is it right, is it justified to remain so long "in the cradle?"

Cand. Chem. Sci. N. P. Apukhtina and Cand. Eng. Sci. A. Ye. Kalaus are working as a team. They have assembled from glass a scale model of a large-scale production. This is a new production process, unprecedented in this country. At present a shop has already been built on the basis of their design data, and another is being designed. And no matter how highly praised the skills and experience and competence of these scientists may be, they themselves are a little uneasy. What if... for the entire process and method is being copied from the laboratory under industrial conditions without, essentially, any industrial tests... straight from the laboratory to the metallurgical plant. It is quite clear that Apukhtina and Kalaus would be eager for a chance (had it existed) to utilize a pilot installation.

It may be that the above example is not illustrative enough and that, god willing, the by-passing of one or two "stages" helps to speed up the introduction into industry. But such lucky accidents are fairly rare. Usually hasty actions of this kind, insufficient operating trials, ultimately lead to delays and failures to activate on schedule new shops and plants. For whereas a pilot or experimental installation can be repeatedly altered at low cost, the failure to use this installation may result in undetected design shortcomings which under production condi-

tions cost millions of rubles to rectify.

What is the current mode of operations at the laboratories of the VNIISK?

A chemist performs an experiment and then processes its results. A day or two afterward he performs another experiment, then still another, and so on. Every time the preparations for the experiment have to be repeated. The "cradle" flask method is used for an unjustifiably long time. Test tubes and flasks are needed to search for new principles, reactions and processes. But once the principle is found, further research should be immediately transferred onto a pilot installation operating like a clockwork. It is on this installation that questions of dosage and percentile ratio are clarified and the chemistry of the process is elaborated, detailized. The next stage already can be a large experimental installation on which the new principle is conclusively verified, and problems of technology are settled. This will reduce research time to the minimum.

This, in the opinion of Corresponding Member of the Academy of Sciences USSR A. A. Korotkov, is how activities should be organized in the branch institutes that are interested in carrying out their investigations as soon as possible. But this requires, first, mobile facilities for the rapid replacement and alterations of the units and instruments of the pilot installation. Second, this requires a permanent and large staff of mechanics, fitters, electricians, and other specialists.

The present ratio of researchers to the workers of the auxiliary staff at the institute can hardly be considered normal. Ideally, according to Korotkov, it should be 1:2 in favor of the latter. But actually the researchers and laboratory workers together at present account for approximately 80 percent of the staff of the institute, while the mechanics and repairmen account for a much smaller percentage. This makes it impossible to organize the modern methods of analysis on a scientific basis and to sufficiently mechanize laboratory work.

In general one had to listen repeatedly to the admission that the technological facilities of the VNIISK lag considerably behind its research facilities. This impedes an operative introduction of discoveries into industry. A researcher may underestimate various factors which will

rapidly make themselves felt in the technological stage. But the number of technologists at the VNIISK is still small. The establishment of the technological laboratory is merely the first step. This path must be further followed; engineers-technologists are needed in every laboratory.

The institute needs a strong design division. Similarly, a better selection of specialists for the technical division of the experimental plant warrants some thought. The latter division is headed by an expert director, O. S. Vasil'yev. But probably the functions of this division do not consist merely in drafting notices and instructions. It must be given a greater work-load.

At present every one at the VNIISK can see clearly the losses on the road from the test tube to the experimental installation and thence to the production shop. Time is passing irretrievably, is being squandered on trifles that add up into years. But at present this has to be ignored, as it is due to quite objective reasons. These reasons consist in underestimation, in reluctance to look ahead. At one time the pilot installations were underestimated and no attention was paid to procuring adequate experimental facilities. The heads of the VNIISK should have at the time heeded the demands of the scientists for the organization of a strong experimental base.

At present the institute already cannot cope with many tasks. Whenever metal is concerned, the sequence of research has to be determined. Whenever an installation is being built for one laboratory, the others have to wait. Whenever a shop must be rapidly modernized, the work on the other sectors is halted.

The institute is cramped for space. The construction of a new building on Vasil'yevskiy Island has essentially changed nothing, as two-thirds of its space was "grabbed" by designers. The construction of the experimental base must be maximally expedited. Realistically speaking, it can be built within two years. But the State Committee for Chemistry has allocated the funds on a five-year scale. The interests of the institute must be supported, as they also are the interests of the great chemical industry. With the current facilities, on which even the construction of a simple apparatus nozzle takes two weeks, no great progress can be made. Unfortunately, this impotence often leads to replacing genuine, comprehensive tests by standard tests

which fail to reveal many of the possibilities of materials.

The world of synthetic rubbers is great and diverse. The Institute imeni Academician S. V. Lebedev at present performs research in both all-purpose rubbers and special rubbers (that is, heat-resistant, frost-resistant, oil-proof, etc.) and latexes (that is, aqueous emulsions of rubber which can be transformed into waterproof fabrics, adhesives, rubber accessories). Mankind is striving to reach the stars; aircraft speeds are increasing. And every advance higher and farther requires resilient materials that are capable of withstanding enormous temperatures -- 500°C and more, radiations, and gas currents. The vigorous development of technology dictates the necessity to develop materials with a "margin" of desired properties from artificial rubbers. In our days the staff of the VNIISK is expected to solve these tasks. And at a high level. too!

S. V. Lebedev, with whom this institute "began," had many students. He knew how to rally around him enthusiasts and gifted people. He established his own school of thought. His disciples have been and are continuing his work. But what about the youth at the institute? Around whom are they rallying at present?

Until recently the Leningrad University professor A. I. Yakubchik worked at the VNIISK, as did the Corresponding Member of the Academy of Sciences USSR B. A. Dolgoplosk. They are talented chemists and deserving scientists. The professors A. L. Klebankskiy and Yu. A. Gorin, the Corresponding Member of the Academy of Sciences USSR A. A. Korotkov, and the Cand. Chem. Sci. are part and parcel of the life of the institute. It would seem that they, who have made substantial contributions to science, should have their own followers and disciples. But no one has been heard to call himself a disciple of Korotkov, Klebanskiy, Gorin, or Livshits.

Professor I. Ya. Poddubnyy said: "Our young staff members are quite good, very practical and talented. All that is needed is to give them the proper direction, educate them in the spirit of creative inquiry, widen the elbowroom, venture to organize youth brigades, and perhaps even to assign exceedingly exacting tasks."

Unfortunately this principle is followed only at a few laboratories, for example, that of I. Ya. Poddubnyy. In his time he had been the youngest head of a laboratory. He can

understand the youth and knows how to give it "room for flight."

On the whole, however, at the VNIISK the attitude toward young scientists is not quite correct. The youths are being needlessly long kept "in short pants" there. It is a great event if a person younger than 30 is appointed as a team director. They can be counted on the fingers of one's hand: Kormer, Mitrofanov, Kogan, Babitskiy... Moreover, one-half of them still bear the title of junior scientific research worker. To deserve the honor of being called a senior researcher one has to "grow up" to 40. This title at the institute is not infrequently conferred mainly on the basis of seniority of years worked.

When a junior scientific research worker is transformed into a good laboratory worker, that is, does what he is told without thinking and inquiring for himself, the institute suffers a great loss.

To Academician Lebedev synthetic rubber was the ruling passion of his life. He developed his own teachings, his own methods, where there were nearly none. And he accomplished this within an extremely short period of time. The present opportunities of the VNIISK scientists are incomparably greater. But Lebedev's traditions should not be forgotten. After all, at that time, not an hour was lost in translating into reality a scientific discovery.

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CSO: 1830-N

CRITICISM OF CONSTRUCTION OF THE CHIRCHIK ELECTROCHEMICAL COMBINE

[Following is a translation of an article by K. Vysokov and K. Mirkhatov in the Russian-language newspaper Stroitel'naya Gazeta (Construction Gazette), Moscow, 16 Jan 63.]

The installation of the trestle-work leading to the new buildings of the Chirchik Electrochemical Combine was proceeding full steam. Unexpectedly the builders encountered an obstacle: the scheduled site of installation of reinforced concrete posts proved to be occupied by installations for pumping liquid fertilizers.

The installers were worried that they deviated from the design specifications.

But no, they checked and found that they were following precisely the blueprints. It turned out that the designers overlooked the existence of these installations. On being notified accordingly, the designers, strange as it may seem, refused to modify their designs in any way.

"There are no such fertilizer storage tanks in the master plan," they asserted.

The chemists were astonished: "How can they not exist? They have been standing and operating there for many years now."

"None of our business. They who put them into place, let them take the tanks away."

And a long dispute ensued. The customer argued, the designers refused, and the installers were idled. It was only after the builders filed an official claim against the uncompleted project that the situation made some

progress. The wrangling lasted more than three weeks.

This story need not have been told to the wide public had it been a rare occurrence. But similar instances, unfortunately, recur often on this construction site and, as the saying goes, have become the norm. So is it surprising that the State target for expansion of the capacity of this combine was not fulfilled in 1962. In particular, the schedule for activating the ammonia production facilities was not kept, the assembling of the building of the shop for the production of carbamide -- a very important agricultural chemical -- lags considerably behind schedule, and so do the construction and installation operations with regard to other important facilities.

Of course, the builders too bear the guilt for the lag. But the main blame belongs to the designers. This refers to the large staff of the local branch of the GIAP (State Scientific Research Institute of the Nitrogen Industry and Products of Organic Synthesis), located literally two steps from the gate of the combine. This branch, established three years ago to assure the modernization and expansion of the production capacities of the enterprise, currently employs more than 200 designers, engineers, and scientific workers. In the main they are resourceful, energetic young people. The heads of the branch nearly all used to work for the combine in the not distant past. The director, V. Gavrilov, used to head the central laboratory of the combine, and the chief engineer, B. Danchenko, had been for many years a shop chief. The chief mechanic P. Mekhrengin, and other specialists, also had previously worked for the combine. In a word, the staff of this branch consists of skilled specialists and it should seem that the interests of production are close to their hearts.

How then did it happen that such a staff could indifferently observe the situation of this major project while virtually evading its responsibility as the general designer?

Take, for example, the building of the carbamide shop. The design of this structure was drafted by a subcontractor -- the Rostov Promstroyproyekt. It was very late in providing the working blueprints. Solely because it was incapable of solving operatively the problems of the seismic resistance of this 40-meters-high structure, unique for Central Asia. Now, the heads of the Chirchik branch of the GIAP did not provide skilled assistance to the subcontractors. They failed to point out that the possibilities

of the production base should be taken into account when selecting the precast reinforced concrete elements. As a result, the design of this building provides for an excessive number of different type-sizes of beams and girders, including those that, though listed in the catalog, still are not being fabricated on an industrial scale in Central Asia.

The heads of the branch like to repeat with pride: "We are the general designers." But when it comes to fulfilling their functions, they hasten to hide in the bushes. This happened during the installation of a new facility at a building of the ammonia synthesis shop. The metal column of this unit weighs nearly 70 tons. The overhead crane present in this shop is designed for lighter loads, and there are no other hoisting devices. A tower crane could not be installed as the roof would not permit it.

The builders turned to the designers with an appeal for help. But the people at the GIAP branch could find no way out except to counsel "raising the column by means of the available overhead crane upon proper coordination with the boiler supervision inspectors."

Trying to justify this formalistic reply, the heads of the branch argued that the means of mechanization should be selected by the builders themselves and that in this case the builders had no justification for "bothering" the designers.

As for the questions raised by the builders with regard to the design documents drafted by the subcontractor design institutes, the heads of the GIAP branch do not even want to listen to them and say that this is no concern of theirs. They even declare so in writing: "With regard to any technical problems associated with facilities not designed by the Chirchik Branch of the GIAP, henceforth please solve them directly with the designer organization itself, on letting us know in every individual case." Signature: "Chief Engineer at the Chirchik Branch, B. Danchenko."

The people at this branch persistently follow the unworthy principle of being all takers and no givers. For example, the builders-subcontractors needed extra copies of certain blueprints. The customer consented to the additional expenditures involved. The designers took their own time: weeks and months passed, until finally the matter began to smell of scandal. Now, that was not a request for a favor

but a legitimate demand, anticipated in the Instructions for Drafting Projects and Cost Estimates.

The only thing in which the designers at this branch display an enviable assiduity is the exchange of correspondence with the builders. The letters are being written for the most insignificant reasons, and sometimes also for no reason at all.

We were shown a folder weighing several kilograms which contained hundreds of closely spaced letters received from the designers. This graphomania reaches such an extent that the chief engineer at the combine had to bring it to the attention of the heads of the branch.

But the designers remained true to themselves. The bureaucratic correspondence, substituting for living bonds with the project, is growing steadily. And it is being exchanged between organizations located tens of meters from one another, on the same street. This makes all the more strange the assurances of the director, V. Gavrilov, that red tape, which is sinking roots increasingly deeply at the Chirchik branch, is merely a malicious rumor.

The Chirchik branch of the GIAP is expected to provide design documents to not only the Chirchik Electrochemical Combine but also other great chemical enterprises in Central Asia. One wonders how will the Chirchik designers embody into reality their designs on sites located hundreds of kilometers from their offices?

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CSO: 1830-N

BUILDING THE SUMGAIT CHEMICAL COMBINE

[Following is a translation of an article by B. Mishne in the Russian-language newspaper Bakinskiy Rabochiy (Baku Worker), Baku, 12 Jan 63.]

On the decision of the Party and Government the nation's largest chemical combine is being built in Sumgait. It is expected to engage in 32 different types of chemical production for the needs of industry, agriculture, and consumers.

The method of refining hydrocarbon raw materials used at the Sumgait Chemical Combine differs from the other methods in that it includes the principal operations of the processing of low-octane gasoline into aromatic products, followed by the complete cycle of processing the latter into finished synthetics.

The new project is characterized by the introduction of catalytic processes in their most modern versions, the use of large-capacity production installations, and the widespread introduction of automation and telemechanics.

The designs of the shops and installations incorporate the numerous advances and progress accomplished in this field in recent years both in this country and abroad.

To visualize the scale of the construction, suffice it to present the following figures: the volume of capital investments is counted in millions of rubles. The shops and installations are planned to lie over a vast area. During the construction 5.2 million cubic meters of soil will be excavated and 350,000 cubic meters used for fillins. More than 450,000 cubic meters of concrete and reinforced concrete, of which 210,000 in precast form, will be poured or installed. Thousands of kilometers of piping will be laid, and tens of thousands of tons of metal components installed.

The entire country is taking part in building the combine. Equipment is arriving from Moscow, Leningrad, the Transcaucasus, the Far East, the maritime republics of the Baltic, the Ukraine, the Carpathian Region, Belorussia, Siberia, and the Volga Region.

The work on the project site, under the direction of the Construction Administration No 19 of Trust No 1, Ministry of Construction Azerbaydzhan SSR, as the prime contractor, is being performed not only by Azerbaydzhan installation organizations -- the Azmorneftestroy, and the Promzavodmontazh -- but also by the Kavelektromontazh, the Kavsantekhmontazh, and the Yuvmontazhavtomatika, and later on still other subcontractors will be enlisted.

Although it is not customary to begin the new year with a criticism, I would like once more to recall the shortcomings and omissions by the builders and designers which are slowing the rate of construction of the combine.

At first glance 1962 was favorably completed. The prime contractor had carried out the plan of construction and installation operations on the scale of 3.7 million rubles. Actually, however, due to the completion of secondary objects, the first section of the combine -- the gas-fractionating installation together with its auxiliary facilities -- had not been put into operation, and a large number of uncompleted operations had to be carried over to 1963.

Of the important facilities scheduled for completion in 1962, work was nearly completely halted on the following: graduation towers, trestle bridge, emergency warehouse, gasoline collector in the area for the storage of easily flammable fluids, and the flare facility. Work is progressing very sluggishly on the construction of a closed-circulation water pumping system, an internal water supply system, purification facilities, trestle bridge for the pipeline transport of materials, and other facilities indispensable to the operation of the entire plant.

The causes of this situation are many, but the principal three are: manpower shortage (the minimum requirement is 1,500 to 1,600 persons, whereas only 600 are working on the site); shortage of construction equipment and machinery; and deficient supply of concrete and reinforced concrete.

Moreover, in their chase of plan fulfillment, the

builders sometimes fail to do quality work. I will be specific.

On the sector where S. Karasev is the Chief and S. Mustafayev is the foreman, during the construction of a trestle bridge for the pipeline transport of materials from the Sumgaitskaya Heat and Electric Power Station to the combine, the installation of precast reinforced concrete beams deviated considerably from the design specifications. Instead of attaching one end of the beams in a fixed position to the marked-out parts of the frame brackets while leaving the other end in a sliding position, both beam ends were welded on -- and this, considering temperature strains, does not assure stability of the trestle.

The concreting of many important footings by the workers of the same sector was performed intermittently, thus causing the footings to be of layered, pitted kind and hence also of lower strength.

The fire control water tank in the area for the storage of easily flammable fluids was "built" by the foreman N. Ryabin in such a manner that it subsided even before it was to be put into operation. As a result, a continuous longitudinal crack, running from top to bottom, developed on a wall of the tank.

At the administration building, tie stays were not sunk through and welded to the "regili" [?] of three floors, and this may lead to the collapse of the floors. This building is being erected by builders from the sector headed by S. Lyatifov and the foreman Kh. Muradov.

It is characteristic to note that every crude violation of the design was brought by the combine workers to the notice of the prime contractor -- the chief of the Construction Administration No 19 D. Kuliyev, the chief engineer G. Kasumov, and the head of Trust No 1 M. Abdullayev and chief engineer M. Kabakov. So far, however, no decisive steps have been taken, although they could help the builders to avert mistakes.

The designers, too, deserve major criticism.

For while for 1962 the builders were adequately provided with design-estimate documents, for 1963 only a little more than two-thirds of their needs was met.

And this, quite naturally, may from the very first days lead to a disorganization of construction and installation operations and to unpurposive capital investments which, in turn, will affect adversely the completion of additional facilities next year and may even lead to failure to put these facilities into operation on schedule.

The quality of design work also must be mentioned: it leaves much to be desired as yet. It happens not infrequently that designs turn out to be highly incongruous. For example, the layout and interlocking of the gas-fractionating installation were improperly designed, so that the interlocking of the isobutane condensers-coolers had to be altered. The open framework of this installation, erected in 1960, was designed without allowing for seismic tremors. It was only in the second half of 1962 that designers issued revised blueprints, whose implementation in construction involved extensive alterations.

The designers display an absolutely unwarranted lack of energy when solving the various questions raised by the combine workers, builders, and installers with regard to individual finished objects. In many cases they take the totally unjustified road of definding the "honor of the uniform," refusing to incorporate into their designs any revisions, no matter how valuable they sometimes are, that they themselves have not thought up.

This is eloquently illustrated by facts.

For example, the heat exchanger of the gas-fractionating installation was designed to be aligned in such a manner that neither its servicing nor its repair were feasible. At the combine this was noticed in time, but the designers paid no heed to our arguments. As a result, the combine had to adjust the problem with its own resources.

Further, the workers of the Gosgortekhnadzor suggested the replacement of the originally designed arched spans of the gas pipeline and flare line across the Sumgaitchay River by straight girder spans. This proposal was rejected without any explanation.

The workers of the combine recommended for one of the structures the replacement of the brick wall of a septic tank by a reinforced-concrete wall, which is easier to erect and half as expensive. The only reply they received was, again, disdainful silence.

The refusal of the designers to consider and comment on labor-saving suggestions is completely inadmissible, first and foremost from the moral point of view. It is simply impossible to understand how the heads of the design organization, K. Shukyurov and F. Rustambekova, can so efficiently stamp out any sparks of initiative among the masses whenever they appear.

At the same time, the prime contractor supervises in a completely unsatisfactory manner the implementation of its project. The designers hardly ever visit the construction site, and this lack of control is definitely in some way responsible for the shoddy quality of certain operations.

Now, here, on the site, the moral attitude should have been high, uncompromising.

It must be made clear that the designers, combine workers, builders, and installers are called upon to accomplish a common task -- to create in this republic a giant of chemistry which must be operated at full designed capacity as soon as possible. Therefore, every seed of reason, no matter who may sow it, must be lovingly cultivated. This is crucial.

In 1963 the plan of construction and installation operations will have been 2.5 times as high as it was in 1962. It is high time to draft and implement measures capable of assuring a sweeping expansion of construction and installation operations from the very first days of the new year.

However, the situation on the site is alarming. The Sumgait Reinforced Concrete Products Plant No 1 is incapable of meeting the needs of the combine project. So components and elements have to be brought in from Baku and Mingechaur, which is very costly, let alone the fact that transportation sharply reduces the quality of the products and hence also of the entire construction. Meanwhile Trust No 1 is making no use of its concrete-production equipment.

Why is it then that the Ministry of Construction has not listened to the voice of the workers of the combine and the prime contractor, who had repeatedly raised the question of the need to organize the on-the-spot production of concrete and reinforced concrete directly on the construction site?

The implementation of this proposal will make it possible to operatively solve the problems of production of concrete and reinforced concrete to meet the construction requirements at any given moment, to nearly completely eliminate unproductive transport expenditures, to relieve a large number of freight cars and large trucks, and to improve the quality of concrete and reinforced concrete and hence also of construction operations.

It is finally time to solve in a statesmanlike manner the problems of here and now, to learn how to count and save the nation's resources, to declare a firm and resolute "no" against rejects and slipshod quality!

It must be borne in mind that the production of the Sumgait Chemical Combine is being expected by the nation's industry and agriculture and population, that the bringing up of this enterprise to its full designed operating capacity within one and one-half years will assure the complete recoupment to the State of the enormous funds which will have been invested in its construction. That is why any further dispersion of capital investments, immobilization of funds in uncompleted construction operations and equipment, is absolutely impermissible.

Every effort and attention must be primarily focused on completing the facilities scheduled to be the first to start operating. This and this alone can and should assure the sweeping expansion of construction and the prompt activation of all the production shops scheduled by the national economic plan.

At the November Plenum of the CC CPSU Comrade Khrushchev said: "It is finally time to put an end to the shallow and shortsighted approach to the development of the chemical industry, to think big on the national scale and to economically evaluate properly the tremendous prospects and benefits derivable to the national economy from the development of the chemical industry."

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CSO: 1830-N

START THE INDUSTRIAL PRODUCTION OF ESKAPON --

THE SOVIET SYNTHETIC RESIN

[Following is a translation of an article by P. Kazakov in the Russian-language periodical Nauchno-Tekhnicheskiye Obshchestva SSSR (Scientific and Technical Societies of the USSR), Moscow, No 12, Dec 1962, pp 40--42.]

This elastic yet firm material was conceived as long ago as before the war, but only recently did it receive its citizenship rights. It may be therefore that certain specialists, seeing something unknown, non-Russian, in its name, up to now have been turning to foreign literature.

In vain. Eskapon is a 100 percent native invention and it constitutes the further development of the classical work of the organic chemist Sergey Vasil'yevich Lebedev, who developed the industrial method of obtaining synthetic rubber.

Author's Certificate No 66028

As soon as this rubber had appeared, scientists began to work to endow it with the necessary properties -- elasticity and hardness. Quite a few interesting and ingenious solutions were proposed, and subsequently employed widely.

Once Academician A. F. Ioffe was shown a piece of a hard horn-like substance which contained not a gram of sulfur. And this was of considerable technical interest, as it opened the prospect of increasing the thermal and electrical characteristics of rubber. Sulfur, as is known, disturbs the non-polar structure of the material, thus reducing its quality.

The famous scientist inspected the mysterious material for a long time.

"Whose work is it?" he asked.

He was told: that of Leontiy Terent'yevich Ponomarev, a graduate of the Leningrad Polytechnic Institute imeni M. I. Kalinin. Searching for a good dielectric the young investigator took butadiene rubber, placed it in a compression mold, and applied to it a pressure of 50 atmospheres.

The astute, analytically minded scientist ultimately declared:

"Es-ka-pon... Synthetic Rubber of Ponomarev!" [Syntetícheskiy Kauchuk Ponomareva]

A little time passed, and the regular readers of the Zapiski [Notes] published by the Polytechnical Institutes again paid attention to Ponomarev's work. In one of the issues he described a new project he had been working on. On combining in closed vessels the oxygen with the non-oxygen treatment of rubber, he obtained a resin whose chemical structure approximated that of the resins obtained from vegetable oils, for example, linseed oil.

For the method of obtaining hard eskapon and eskapon resin Leontiy Terent'yevich Ponomarev was granted Author's Certificate No 66028.

Externally hard eskapon resembles a plastic. It can be fashioned into any shape, of any color. It is notably easy to work by cutting tools and to polish. But its principal advantage is the ability to retain its strength characteristics in a wide range of temperatures, from 150 to 450°C. Eskapon is also impervious to contact with chemical compounds.

But years passed before eskapon materials won recognition in industry and broad application.

The young engineer L. T. Ponomarev arrived at the Baranchinskiy Settlement. The local electrical machinery plant needed good specialists, and he was appointed chief of the insulation-winding bureau.

Some time afterward Ponomarev brought to the plant a few lumps of synthetic rubber of various grades and several articles, some fashioned from a material as translucent as glass and others resembling ivory, jasper, agate.

Leontiy Terent'yevich was told: All this is very fine, but not in our line. What we need is a flexible insulation material to replace mica.

Ponomarev succeeded in having the plant establish a laboratory of insulation materials. It was gradually expanded: the chemical group was complemented by a technological group, which dealt with designing apparatus and facilities for the production of eskapon compounds. The experimenters worked day and night at the laboratory, searching for the required structure of the resin and verifying its dielectric properties.

The discovery, as it often happens, occurred by accident. Once a snow-white strong fabric was brought to the plant. The canteen workers used it to sew smocks for themselves. Then it turned out that the smocks have an unpleasant property: they irritate the skin. It turned out that they were made of...fiberglass fabric.

Ponomarev, who was shown this material, cogitated for a minute and then, dipping it into a fresh batch of eskapon resin, ordered:

"For heat treatment!"

The fiberglass fabric coated with eskapon varnish endured the high resistance of current-carrying components of an electric motor, which heat up to more than 200°C while in operation.

Thus a new substitute for mica and cotton fabric appeared at the Baranchinskiy Electrical Machinery Plant. The economists calculated that if the enterprise were with its own resources to produce one million meters of fiberglass-reinforced eskapon insulation fabric, it would save the national economy more than 100,000 tons of linseed oil and the same quantity of cotton!

Machines Are "Clothed"

The experiments were successful, and their cost proved to be justified. Synthetic eskapon varnish began to be used to coat parts operating under difficult environmental conditions.

Years passed by, and eskapon coatings placed on copper, aluminum foil, and fiberglass fabrics, proved to remain

just as elastic as in the first days of operation. The eskapon varnishes were distinguished by their high dielectric properties, mechanical strength, imperviousness to water, and gas resistance.

Electrical machines "clothed" in eskapon passed the test of time. They performed one and one-half to two times as long as the machines provided with silk and cotton insulation.

In subsequent years the new materials were used in tens of thousands of machines built at the Baranchinskiy Plant. They were used to "clothe" the A-AK induction motor, sizes 10 and 11, main lots of 6,000-volt machines, and others.

The Riga Electrical Machine Building Plant used eskapon instead of silk-mica tape in insulating the frontal parts of the winding of low-voltage generators, the shackle pins of crane-metallurgical resistors, and the armature coils of DK-106 electric traction motors.

The Khar'kov Electrical Machinery Plant last year alone saved more than 100,000 rubles by introducing eskapon materials.

Recently the inventor devised a fungus-resistant varnished fabric, with the aid of which designers developed electrical equipment suitable for operation in tropical countries.

Insulation is just one of the fields of application of the materials developed by Ponomarev. It has been demonstrated that eskapon in solid form can be used instead of ferrous and nonferrous metals in equipment operating in aggressive chemical media. The staff members at the Irkutsk Branch of the Giproneftemash Institute believe that eskapon is suitable for the manufacture of packings for high-pressure piston pumps in the range of up to 700 atmospheres, as well as for centrifugal pumps for the transfer of petroleum products.

The Demand is Growing, But the Capacity?

The introduction of eskapon insulation into electrical machine building was made easy by the simplicity of its fabrication. Ponomarev not only developed the new material but also the techniques for its production and original

equipment for the fabrication of eskapon fabrics.

As the demand for eskapon rose, the Elektroizolit Plant (Moskovskaya Oblast) put into operation the first eskapon-varnish fabric shop in the country. Analogous facilities were put into operation at the insulation materials plant in Mayli-Say (Kirgiziya). But both shops during the previous year produced only 1,200,000 meters of fiberglass-reinforced eskapon-varnish fabrics, which is way below industrial demand. The situation in the present year is no better. The Gosplan USSR planned the output of eskapon varnish fabrics at only 1.6 million meters; although the demand is for more than three million.

Three million is not so much in itself, and this figure, too, does not take into account the needs of the cable industry, whose specialists believe that eskapon will be fully suitable for insulating power cables with voltages of up to 10 kilovolts. This also does not include the needs of the radio engineering industry, which is waiting for eskapon micro-materials in the 0.08 and 0.1 millimeter sizes.

The demand is high. What matters here is not only the quality of eskapon insulation but also the fact that its use relieves hundreds of thousands of meters of cotton fabrics and thousands of tons of edible vegetable oil.

The restrictions on the production of eskapon insulating materials are said to be due to the shortage of fiberglass fabrics. But we contest this interpretation. It is simply that the Gosplan USSR failed to consider that the fiberglass-reinforced eskapon shops with an aggregate capacity of two million meters annually, planned for construction at the Plastmass and Azerkabel' plants, proved to be too tough a "nut" to crack for the Azerbaydzhan and Armenian sovnarkhozes. Having vainly awaited assistance from the Gosplan, they abandoned the project.

A year and a half ago, the heads of the Severo-Osetinskiy Sovnarkhoz requested assistance for establishing an eskapon materials plant in their republic. They strengthened their request by the following arguments: the starting raw materials are nearby, in Sumgait and Groznyy, and the skilled personnel is available as well. But here too no decision has been made. A pity!

Because we lack a specialized large-capacity plant

for the production of eskapon insulation, electrical machine builders strive to produce it with their own resources. As a result, certain enterprises, perceiving the advantages of the new material, go to the extreme of guarding the secret of its production, in the desire to become the sole suppliers of eskapon...

The Director of the Tbilisi Electrical Insulating Materials Plant G. Samkharadze describes such an instance.

"We wanted to organize the production of glass-filled eskapon-varnish fabrics and for this purpose dispatched our specialists two times in a row to the Riga Plant. But there they would not give them information about the specifications and batch composition. They were told: take our finished products. But pay cash first!"

The Question Remains Open

Although the path of eskapon insulation has not been strewn with roses, it did, all the same, "break through" into industry and win recognition.

But for how long?

This must be seriously pondered. The basis for the production of eskapon varnishes and batches is one of the "oldest" Soviet synthetic rubbers -- SKB [butadiene rubber]. The Soviet industrial demand for this rubber is declining each year, divinyl rubber being more popular. Therefore some plants have discontinued the production of SKB rubber. The State Committee of the Council of Ministers USSR for Chemistry has drafted a proposal for discontinuing its production at a third plant as well. What then will happen to eskapon? It may be that there will be no material to make it from, and then the expansion of the output of effective electrical insulating materials will be endangered.

This cannot be allowed to happen!

Well, and how is the further development of eskapon polymers progressing? After all the results of basic research are important not only to the electrical industry.

Three years ago Academician A. V. Topchiyev turned to the Gosplan USSR with the request for a thorough study of the long-range demand for eskapon materials and of the possibilities for building enterprises. The question of

the expansion of scientific research was considered. The establishment of a special design bureau with scientific-research laboratories was intended. Meeting the desire of the Academy of Sciences USSR, specialists from the scientific research institutes of the State Committees of the Council of Ministers USSR for Chemistry, and for Automation and Machine Building, and of other agencies, outlined proper measures.

What followed?

The laboratory at Barancha, once a scientific center for research in the properties of eskapon materials, has now become an ordinary electrical insulation laboratory. Discouraged by lack of support, the inventor of eskapon left the laboratory, and so did other leading specialists.

Unfortunately, the scientific and technical societies of both chemists and power experts showed no interest in the development of eskapon polymers. These societies had not once placed on their agenda studies relating to the investigation of the properties of the new material. Even though the potential is high. For eskapon polymers in their structure occupy an intervening position between linear polymers and crystalline solids, and display an extraordinary combination of properties: the hardness of metals and the elasticity of high polymers. Even in their heat resistance they occupy a special position: they absolutely do not soften or melt at all until their pyrolysis point is reached.

One wishes to believe that the scientific-technical public will not stand aloof from this highly promising new polymer and will assist the men of industry in developing on its basis many other useful materials as well.

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CSO: 1830-N

CHEMICAL INDUSTRY IN 1963

[Following is a translation of an unsigned article in the Russian-language newspaper Sovetskaya Moldaviya (Soviet Moldavia), Kishinev, 9 Jan 63.]

...The 1963 National Economic Plan provides for the highest yet rate of growth of chemical industry. Capital investments in this industry will be 36 percent higher than in 1962. Gross chemical output will increase by 17 percent, of which the output of plastics and synthetic resins alone by 25 percent, and of artificial and synthetic fibers by 14 percent. The output of synthetic rubber will increase considerably, with the output of rubber from a petroleum raw material -- butane -- alone to be nearly doubled. New capacities for the production of quality synthetic rubber will start operating at the Kuybyshev Plant and the Volzhsk Chemical Combine.

In 1963 22.5 million tires will be produced, including more than 4.6 million tires with an extra-long service life. Such tires can run for 120,000 to 150,000 kilometers.

Wonderworking chemistry steadily increases its assistance to agricultural workers. Mineral fertilizers, herbicides, pesticides, weed killers, fabric stimulators of livestock growth, will find still broader application.

The volume of output of mineral fertilizers in 1963 will have reached 20 million tons or 16.2 percent more than in 1962. Plans exist for putting into operation new facilities for the production of mineral fertilizers on the scale of more than seven million tons at, among other enterprises, the Shchekino and Voskresensk chemical combines. The Grodno Nitrogenous Fertilizers Plant, the Soligorsk Potash Combine, the Kedaynyay Chemical Combine, and other enterprises will join the operating enterprises.

The Seven-Year Plan envisaged increasing the output of chemical fibers four times and of the most valuable of these -- synthetic -- 12 to 13 times. In 1963 large capacities for the output of chemical fibers will be put into operation at the Barnaul, Balakovo, Daugavpils, and Chernigov plants. The country's first plant for the production of nitron fiber -- a perfect wool substitute, will be put into operation.

The chemists have developed many varieties of imitation leather, whose output is planned to rise to 95 million square meters by 1965. The personnel of the Kishinev Iskozh Combine is expected to contribute to this goal. As early as in 1963 the combine will have produced two million square meters of imitation leather.

Currently steps are being devised to further accelerate the expansion of research and development work and the construction of new and expansion of old chemical enterprises so as to assure at utmost speed the chemization of every branch of the national economy and to occupy the world's leading place in the production of synthetics and synthetic products.

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CSO: 1830-N

NEW PRODUCTION AT THE MOSCOW GALALIT PLANT

[Following is a translation of an article by N. Petrov in the Russian-language newspaper Vechernyaya Moskva (Evening Moscow), Moscow, 26 Dec 62.]

"Ivan Danilovich: what innovations appeared at the shops of this enterprise during 1962?"

"Come and see," the director of the Galalit Plant replied by telephone.

And so now I am at the plant where the great mystery of chemistry is taking place -- the birth of plastics. I was told of the first and perhaps the most important innovation of this year already while at the director's office. Its occupant, I. D. Barskiy, took out of a box a handful of small dun-colored cubes and strewed them over his desk. Closer inspection of the cubelets revealed that each carried the image of some letter.

"Yes this is ordinary printing type. But why is it so light?"

"That's the whole point," Ivan Danilovich said. "The type is made of a new polymer."

The type made of the AT polymer, developed by the personnel of the enterprise in creative collaboration with various Moscow plants and scientific-research institutes, proved to be one-tenth as heavy as lead type, and five times as durable.

The new plastic is a formidable competitor of type metal (an alloy of lead, tin, and antimony, used in the manufacture of type). By displacing type metal it saves the national economy thousands of tons of scarce metals.

The second innovation which was "granted a visa" during the present year, was imparted to me by the shock-worker of Communist Labor, the old skilled apparatus operator K. V. Varenova.

She said: "For a long time one of the most important operations in the production of plastics -- plasticization -- was performed on rolls which were difficult and unhygienic to operate.

"But now we have acquired this apparatus -- the extruders," Klaudiya Vasil'yevna touched the gray casing of the apparatus, resembling a large boiler. "In the extruders, with the aid of high temperatures, plasticization proceeds much more rapidly, and the resulting plastic is of a higher quality."

The extruders increased output one and one-half times. Three extruders are now in operation, and in the near future the shop will acquire two more.

The chemists of Galalit also showed concern for furniture makers and construction-industry workers. The new synthetic glue whose production was organized during the present year makes the furnishings, windows, and doors of our homes stronger and more durable.

The workers of this enterprise are doing everything in their power to remove during the next year the nameplate "Galalit Plant" and replace it by "Polymers Plant." To this end, they are reducing the output of old, outlived galalith, which requires thousands of tons of a foodstuff -- casein -- as the raw material. This is being replaced by the production of cheap and strong polymers.

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CSO: 1830-N

THE DEVELOPMENT OF CHEMICAL INDUSTRY BY 1963

[Following is a translation of an unsigned article in the Russian-language newspaper Trud (Labor), Moscow, 30 Dec 62.]

"How did the nation's chemical industry end the present year, and what are the prospects for its growth in the coming year?" was the question asked by the Trud correspondent of the Chairman of the State Committee of the Council of Ministers USSR for Chemistry V. S. Fedorov. Herewith is the text of his reply:

Our age is called variously the age of the atom, the age of the most perfect machines, the space age, etc. And every name fits. But it can be just as well called the age of chemistry. In retrospect, you will see that with every year chemistry, or more exactly plastics and various synthetic fibers and resins, increasingly penetrates our life, displacing metal, wood, and wool. This is easy to understand: chemical products are much stronger, lighter, more economical, and more beautiful than their predecessors. At the November Plenum of the CC CPSU Khrushchev declared: "It is precisely chemistry that provides cheaper, stronger, and more accessible materials. These materials are: polyethylene, fiberglass-reinforced plastics, synthetic resins and fibers, and plastics, and they find broad application in industry, construction, and production of consumer goods."

During 1962 chemical-industry workers labored much and proficiently. New synthetic rubber, polyethylene and polyethylene products, synthetic fiber, and other plants were put into operation. In 1962 the volume of chemical-industry output increased by about 16 percent above 1961. The Soviet people received many more handsome and well-made goods, and the country was saved tens of millions of rubles. However, the grandiose tasks that face us necessitate a still more vigorous progress in the future -- for by 1980

the volume of chemical-industry output must be increased approximately 17 times. The coming year 1963 should be to chemists a year of a steep upsurge.

This will be a year of further capacity expansion, primarily as regards the production of plastics, synthetic resins, mineral fertilizers, and urea as the starting product for obtaining various chemicals. The capital investments in the chemical industry will be 41.5 percent higher than in 1962. Enormous figures! But once the effectiveness of these measures is considered, their pertinency will be clear. Take just these two examples.

By 1965 the production of lead-sheathed cable is scheduled to be completely discontinued in favor of polyvinyl-chloride-sheathed cable. Were the entire planned increase in cable-industry output to be based on lead-sheathed cables, about one billion rubles would have to be expended on the activation of new capacities for the production of lead alone. In contrast, the organization of the production of the necessary quantity of plastics will require only 75 million rubles.

Carbamide resins are a most effective binder for the production of all kinds of chipboard and other building materials and furniture. The broad use of these resins will make it possible not only to completely replace casein glue, whose production requires more than 900,000 tons of defatted milk annually, but also to greatly improve the quality of veneer and to save approximately 16.5 million rubles annually.

The production of twisted fiber, used to fabricate durable stretch hose and socks, will also be greatly expanded, as will be the production of viscose cord with a filament tensile strength of 32 to 35 and more kilometers, nonflammable conveyer belts from synthetic fibers and materials for the needs of the coal and other branches of industry, etc.

Many other instances could be cited, Viktor Stepanovich continues. For the old-time chemistry, based on coal and food raw materials, is coming to an end. The time of the chemistry of petroleum and gas has come. At minimal cost we can now produce tremendous amounts of various reactive hydrocarbons from which "are born" polyethylene, polypropylene, polyvinyl chloride, synthetic rubbers, fibers, etc. The State Committee of the Council of Ministers USSR

for Automation and Machine Building has calculated that the use of 31 million tons of plastics in machine building will relieve 10 to 12 million tons of steel and 700,000 tons of nonferrous metals. The fabricating cost will then decline as well.

The workers of the nation's chemical industry, Comrade Fedorov said in conclusion, will apply every effort to storm the frontiers outlined by the Seven-Year Plan and the November Plenum of the CC CPSU.

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CSO: 1830-N

IMPROVE PLANNING IN THE CHEMICAL ENTERPRISES OF BASHKIRIYA

[Following is a translation of an article by A. Laletin in the Russian-language newspaper Trud (Labor), Moscow, 13 Jan 63.]

At our shop hardly a month passes without revisions in the output plan. Moreover, the plan is sometimes increased in the second and last third of the month, when it is no longer possible to speed up output.

In September of last year the personnel of our installation fulfilled the basic State plan 120 percent or, allowing for the increase in target for the last ten days of the month, 101.6 percent. Such "magic tricks" with targets fetter the initiative of zealous workers.

[Signed by] Workers of the Installation No 25/4 at Shop No 8, Salavat Petrochemical Combine: I. Ruzavin, V. Nesterov, Yu. Loginov, Z. Ishkinin, Z. Makhmutov, F. Mukhametov, and others. (A total of 37 signatures.)

* * *

Yes, the authors of this letter are right: at the Salavat Combine output targets are often "reshuffled." True, attempts are made to confine plan revisions to the first days of the month, but sometimes instances happen like the one described by the authors of the above letter.

Last year the production plan for the Salavat Combine was altered 15 times. Veritable bacchanalia occurred during the fourth quarter, when, one after another, seven "corrected targets" were assigned to the enterprise. The corrections were such: now they doubled the target and then they cut it in half. The "final version," received in the penultimate month of the year, looked very strange; tens of millions of rubles of output had to be produced, but the figures on raw materials and on variety of output

added up to only several million.

The chief of the planning division at the combine, Comrade Radzikovskaya, said: "This is the usual 'daubing.' We already got used to it. We're constantly assigned plans which do not match our raw material and other possibilities."

"Daubings" of this kind have recently become the norm for many enterprises of Bashkiriya. Such a deplorable method leads to particularly difficult consequences at new petrochemical enterprises.

The same Salavat Combine was assigned the task of starting the production of ethylene oxide in the second quarter of 1962. But it was well known that the production of this substance could not be started that year due to the lack of special piping. Nevertheless, the All-Russian Sovnarkhoz and the Gosplan RSFSR did assign this task. The facilities still are not ready. The combine does not produce ethylene oxide. This resulted in disrupting the plans of many enterprises whose operation was geared to receiving this product from Salavat. Ultimately the production of ethylene oxide was eliminated from the combine's plan. But the value of the unproduced production was kept in the balance sheet of gross output, to be compensated in some other way.

Another example. The production of polyethylene was scheduled to begin on 1 March 1962, but the activation of this production was scheduled for the second half of the year. Representatives of the All-Russian Sovnarkhoz and the State Committee of the Council of Ministers USSR for Chemistry were present at the combine when the plan was being drafted. They witnessed the situation of the new project and saw the schedules for activation, start-up, regular operation. But still, they assigned an unrealistic task. Of course, the production of polyethylene did not begin until the second half of the year. Once again, many enterprises which counted on receiving the Salavat polyethylene earlier had to suffer. The combine itself found itself in the position of a laggard.

Is last year's history to repeat itself? Or can it be that now the style of planning has changed sharply? No, judging from the Bashkiriyan petrochemical enterprises there have been no changes in this style.

The Salavat Combine was assigned, for example, the task

of starting the production of butyl alcohol early in the second half of the year, but the activation of the necessary facilities is scheduled for as late as the end of the third quarter. Moreover, the Glavkhimkomplekt still has not placed orders for some of the equipment and it promises to provide it only by the year's end. So when is this new and intricate type of production to be organized? When is the production planned for 1963 to be started? It must be bluntly and forthrightly stated: in the present year the Salavat Chemical Combine will not produce any butyl alcohol.

The combine should produce tens of thousands of tons of carbamide (urea). In a word, this is a greatly needed chemical, and the more of it produced the better. But the current capacity suffices to cover only half of the planned target. Due to imperfections of equipment, unpunctual deliveries, and a host of other reasons for which the Salavat Combine cannot be blamed, additional capacities could not be put into operation. The All-Russian Sovnarkhoz has postponed the completion date for these facilities until the end of 1963. The mastering of the equipment will then take several months more. This means that not one kilogram of carbamide will be produced by the new facilities during the present year. But the plan? It remains in force.

One could continue the list of such oversights at the Salavat Combine, the Ufa Synthetic Alcohol Plant, and the Sterlitamak Chemical Plant. Such planning disorganizes production and fetters the initiative of zealous workers.

The Salavat chemists glance with envy at the neighboring petroleum refinery in Ishimbay: it has luck! At the refinery nothing new is being built or introduced into production. All goes well, the enterprise fulfills its plans smoothly, and its personnel receives bonuses.

As for Salavat, it is all astir, in the throes of construction. The petrochemists organized the production of ammonia and carbamide and greatly accelerated and reduced the cost of the design and construction of intricate facilities. The innovators try to utilize to the hilt petroleum and gas raw materials. They are introducing progressive techniques. They face many obstacles. Now, the Salavat chemists are inclined to go to various expedients, for they have not been fulfilling their plans. But what price plans which are divorced from reality and ignore the specific features of the new enterprise?!

Of course, errors are possible in any plan. Any calculation and schedule must be adjusted to the actual situation. So then the recent changes must be taken into account, and oversights must be boldly rectified.

At one time the workers and trade-union activists made quite a few valuable suggestions to improve planning. They suggested, in particular, that no production should be planned for uncompleted enterprises or, at least, plans of this kind should be coordinated to the realistic deadlines for delivery of equipment, start-up, and activation. It is just great when an enterprise organizes a new type of production above and beyond the plan. But plans for a "pie in the sky" should simply not be drafted at all.

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CSO: 1830-N

GROWTH OF CHEMICAL INDUSTRY IN THE MOSCOW OBLAST SOVNARKHOZ

[Following is a translation of an article by I. Karatayev in the Russian-language newspaper Leninskoye Znamya (Lenin's Banner), Moscow, 5 Jan 63.]

The chemists of Moskovskaya Oblast are making their own contribution to the grandiose program for the accelerated development of the nation's chemical industry. By now they provide the national economy with more than 2,500 different chemical materials and products.

The development of the chemical industry of the oblast has been particularly intensive following the May (1958) Plenum of the CC CPSU. Within a short period of time new capacities for the production of many chemical materials and products have been put into operation. For example, the output of artificial and synthetic fibers in the oblast increased by 25.7 percent; nitrolacquers and solvents, by 37 percent; mineral fertilizers, by 40 percent; and reclaim, by 17 percent.

This increase was achieved by modernizing the enterprises and maximizing the utilization of production space and introducing new equipment. Such a path is economically optimal, as by means of it the volume of output can be sharply increased within shorter periods of time and at a much lower cost than by building new enterprises.

Notable accomplishments have been made by the personnel of a leading chemical enterprise of Moskovskaya Oblast, the Karbolit Plant, which, following the November Plenum of the CC CPSU, was the initiator of the socialist competition for the pre-term fulfillment of the Seven-Year Plan targets for the production of synthetics and synthetic products.

The workers of the oblast's chemical industry are

steadily improving production techniques and introducing the most-up-to-date technical advances which produce a large economic effect. At the sulfuric acid shop of the Voskresensk Chemical Combine the low-intensity pyrite-roasting shelf furnaces were replaced by fluidized-bed furnaces, saving hundreds of thousands of rubles annually.

Considerable attention is being paid by chemical-industry workers to organizing new types of production. Between 1959 and 1962 more than 200 new models were developed and built, and more than 300 new chemicals and chemical products began to be produced, some for the first time in the Soviet Union -- such as boron fertilizers, silicone varnishes, acetate and triacetate rayon, nylon, foam polyurethane, and many others.

Nevertheless it must be noted that there still exists unutilized production potential at the chemical enterprises. The tapping of this potential will make it possible to increase the volume and reduce the cost of production and to save a great deal of raw and other materials. This pertains primarily to reducing the proportion of manual operations, mechanizing the heavy and labor-consuming transloading and auxiliary operations: for at present at the chemical-industry enterprises of the oblast, approximately one-third of the workers are engaged in manual operations. Now, the heads of a number of enterprises -- the Zagorsk Paints and Lacquers Plant, the Klin Artificial and Synthetic Fiber Combine, and certain others, absorbed in the automation and mechanization of basic production, pay little attention to eliminating manual labor from auxiliary operations. This is attested by the following instance alone: the Klin Combine employs more than 1,300 persons in manual operations, of whom more than 1,000 persons in the conveyance and packaging of products.

It is a major shortcoming that about four percent of the workers of the oblast's chemical enterprises do not fulfill their quotas. The situation is particularly bad at the Yegor'yevsk Industrial Asbestos Products Plant, the Podmoskovnyy Mining-Chemical Combine, the Chekhov Reclaim Plant, the Aprelevka Phonograph Records Plant. As a result, the national economy receives less needed products from our enterprises than expected.

In the light of the decisions of the November Plenum of the CC CPSU, the sovnarkhoz has drafted concrete steps to further develop the chemical industry and more fully

exploit internal potential. As early as in the next few years the capacities for the production of mineral fertilizers are to be tripled, and sulfuric acid -- increased more than one and one-half times.

Our oblast is rich in deposits of phosphorite ore. Its reserves are estimated at 200 million tons. The collectives of the enterprises and the Moscow Oblast Sovnarkhoz set the task of increasing ore extraction to nine million tons annually within the next few years. This will be sufficient to produce about three million tons of phosphorite meal, which will be the lowest-priced in the country.

The production of highly concentrated compound fertilizers is a vital problem of the development of the production of mineral fertilizers. We have every opportunity for this: an abundant local raw materials base, the country's lowest-priced sulfuric acid, large quantities of cement-dust wastes with a high potassium content, boron fertilizers, and ammonia from natural gas. All this makes it possible to provide agriculture quickly and at low cost with many types of fertilizers containing phosphorus, potassium, nitrogen, and with various trace-element fertilizers in the desired proportions according to the agrochemical composition of the soil.

The Moscow Oblast Sovnarkhoz, in collaboration with the State Committee for Chemistry, early in 1963 will commence at the Shchelkovo Plant production trials of some 20 new chemical crop protectants. Later on in 1963 a shop for the production of zineb, a chemical substitute for copper-containing pestifungicides, should be built at the same plant. This will make it possible to drastically reduce the consumption of the nonferrous metal.

Considerable attention will be paid to expanding the production of synthetics. In particular, as early as in 1965 the output of synthetic and artificial fibers will increase by thousands of tons, and that of plastics and synthetic resins, by tens of thousands of tons.

Unfortunately, there still exist quite a few obstacles to the growth of the chemical industry of Moskovskaya Oblast.

The Voskresensk Chemical Combine opened in 1960 -- four years ahead of schedule -- a boron fertilizers shop. Experiments showed that boron fertilizers, when applied to the soil in combination with other fertilizers, signally

increase the fertility of many crops. Nevertheless, only half the capacity of this shop is being utilized. The reason is that agricultural workers do not know where and how to apply boron fertilizers, and therefore are reluctant to use them.

Because we receive inadequate supplies of copper sulfate and hexachlorocyclohexane, the Shchelkovo Chemical Plant is not completely utilizing its facilities for the production of Paris green, and the Podmoskovnyy Mining-Chemical Combine -- for the production of hexachlorocyclohexane-based phosphorite meal.

The Lyubuchanskiy Plastics Plant has the potential for considerably increasing its output of tractor control sticks, but it cannot tap it because the All-Russian Sovnarkhoz assigns to it only a limited number of metal frames.

The chemists of Moskovskaya Oblast receive fundamentally no help from the workers of the [Main Moscow Construction Administration] Glavmosoblstroy and construction trusts. Many of these failed to draw any conclusions even from the November Plenum. The head of Trust No 10, Comrade Poletayev, halted all construction and installation work on the parts of the Chekhov Reclaim Plant scheduled for the most immediate completion. Trust No 5 (Head: Comrade Bryzgalov), in charge of important construction associated with the growth of chemical industry, consistently lags behind schedule.

We experience an acute shortage of construction equipment -- excavators, bulldozers, motorized and tower cranes. The attitude of the All-Russian Sovnarkhoz toward our request is more than just chilly. The acute shortage of crushed rock and precast reinforced concrete, which should be provided to us by the enterprises of the Moskovskaya Oblast Executive Committee, prevents the on-schedule modernization of many chemical-industry enterprises.

The November Plenum of the CC CPSU outlined the further roads of development of the chemical industry. The chemists of the Moscow Industrial Region shall apply every effort to increase output, organize the production of new materials and products, and expand output capacities.

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CSO: 1830-N

PROGRESS AT THE ZHILEVO PLASTICS PLANT

[Following is a translation of an article by F. Aboimov and B. Yatsenko in the Russian-language newspaper Leninskoye Znamya (Lenin's Banner), Moscow, 12 Jan 63.]

Decrepit shops, backward technology, predominance of manual labor -- such was the Zhilevo Plastics Plant prior to the May (1958) Plenum of the CC CPSU. Now it has unrecognizably changed. In place of old buildings, barely taller than the fence, new production structures have arisen. They include giants as high as a six-story house. But this is not the only outward sign. The modernization of the plant proceeds on the basis of the latest equipment and mechanization and automation of production processes. This is the important thing.

We organized and already put into operation highly mechanized production of nonarcing compression molding materials, block polystyrene, silicone powders, and polyester resins. All of this on the basis of intricate machinery and apparatus, continuous-flow lines, and automatic devices. Thus production can be continually expanded. For example, the personnel of the arc-resistant compression-molding materials shop, owing to technological improvements and the adoption of locally submitted labor-saving suggestions, has already more than doubled its designed capacity. In 1964, when the mechanization and automation of its production will be finalized, the productivity of this shop will increase still further.

Much has been accomplished to mechanize production processes at the block polystyrene shop as well. The most tangible contribution was made by a team of rationalizers headed by the shop chief B. Komarov. It designed a device for pneumatic transport of polystyrene from shop to storage, and mechanized the conveyance of the intermediate to the sectors where it is processed into film and colored. This

innovation raised the technical level and made it possible to relieve 15 persons for other duties. The same team has also assisted the plant to double the productivity of its coloring department.

Year after year the capacity of the silicone powders shop is rising. At present it is already one and one-half times the originally designed capacity.

The mechanization of production and improvements in process techniques have sharply improved the production performance of the plant. The 1962 plan was fulfilled by the enterprise personnel ahead of schedule, on 18 December. Labor productivity rose four percent higher than planned. Due to reduction in production costs, 82,000 rubles were saved in excess of the plan.

All this, of course, is pleasant news. But the plant is still far from perfect. Far from all of its latent potential has yet been tapped. The production of plastics still has not been placed on the rails of a high automation. Partly this is due to us, but mostly to external factors.

Take, for example, the production of silicone molding powders. Many of its processes are mechanized, but in a few manual labor still predominates. In particular, the blending of components, the charging of the batch onto the rolls, and its cutting and crushing, are still performed manually, although they are highly labor-consuming operations.

So why are we not successful in mechanizing them? Primarily because we lack a design bureau of our own. There are only three designers working at the plant. That is just barely enough to meet minor needs of the plant.

Of course it would be nonsensical to establish a large design bureau at our plant -- this is neither economical nor necessary. We would prefer to benefit from the services of such a bureau at one of the leading sister plants. In our opinion the Karbolit Plant could be ideal for this purpose. Let it establish a large design bureau to serve the needs of a definite group of plants with a similar production structure. The plants themselves can definitely get by with five to seven designers each.

Who should primarily be in charge of this? Of course, the Administration of Chemical Industry, Moscow Sovnarkhoz.

But the heads of this organization pay no heed to our proposals and in general give little though to improving design work at the enterprises under their jurisdiction.

We are just as alarmed about the production of the so-called old plastics -- block polystyrene and polystyrene film, and carbamide compression-molding materials. The techniques and recipes for their production are clearly outdated. As a result their quality is indifferent. But not one branch institute in the nation is engaged in improving the physico-mechanical and dielectric properties of the "old" plastics.

The following instance also merits attention. The arc-resistant compression-molding materials shop at our plant specializes in producing intermediates for the spark-extinguishing chambers in the electrical industry. It makes five product varieties. But just try to find in this country even a single institute or laboratory concerned with improving the recipes for these materials. There is not any! We have to solve these problems on our own -- and can we accomplish much at our liliputian and semi-primitive laboratory? For after all, old plastics are finding increasing application in many branches of industry. The requirements as to their quality are rising.

We also do not receive sufficient assistance from the workers of the All-Union Scientific Research and Design Institute of Chemical Machine Building (NIIKhIMMASh). At present every operation of resin condensation is being performed manually at the plant. We greatly need a special condensation machine, which has not yet been devised. It is the NIIKhIMMASh, of course, that should devise it. But for some reason it cannot tackle this project.

We introduce new and modernize old production facilities at our plant according to the designs of the Giproplast Institute. This is a solid institute with a large staff of trained specialists. But it performs its design work in a slatternly manner and often on the basis of obsolete equipment and techniques. Nearly every design of the Giproplast contains many omissions and oversights. Some of these designs are mere rough blueprints which have to be refined by the plant itself in the course of construction. Suffice it to present one instance. At the polyester resins shop the charging of raw materials into apparatus is performed manually. Why has it not been mechanized? Purely because the Giproplast took the path of least resistance, not wishing to go to extra bother. It is not surprising that side by side with advanced equipment at our plant there co-exist cottage industry and manual labor, which retard the development of production.

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