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INDUSTRIAL AFFAIRS

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CONSTRUCTION, CONSTRUCTION MACHINERY AND BUILDING MATERIALS

PROGRESS IN CONSTRUCTION MATERIALS INDUSTRY REVIEWED

Moscow STEKLO I KERAMIKA in Russian No 8, Aug 79 pp 2-3

[Unsigned article: "Toward Builder's Day"]

[Text] Builder's Day in the fourth year of the Tenth Five-Year Plan is to be celebrated by a multimillion army of Soviet builders and workers of the construction materials industry in an atmosphere of tremendous political and labor enthusiasm. In three years of the Tenth Five-Year Plan, the sector's work made a major contribution to the solution of social-economic tasks set by the 25th CPSU Congress.

During this period fixed production capital of the national economy grew 24 percent and its value now amounts to one trillion rubles. More than 700 large industrial enterprises, a number of power complex and more than 300 million square meters of housing space were put in operation.

In 1979, the amount of state capital investment is set at 116.5 billion rubles, or 4.9 percent more than was utilized in 1978. The cost of fixed capital put in operation amounts to 111.7 billion rubles. A significant share of capital investment has been allocated for the development of heavy industry sectors. Thus, compared to 1978, capital investments for the development of the petroleum, gas, coal industry and transportation of petroleum and gas increased 25 percent, ferrous and nonferrous metallurgy--10.1 percent, chemical industry--12.8 percent and machine building--12.2 percent.

In the fourth year of the five-year plan power capacities will grow 12.3 million kilowatts. Atomic energy is developing at a fast pace. A power unit with a capacity of 1 million kilowatts is going into operation at the Leningrad AES, the first high-speed neutron unit with a capacity of 600,000 kilowatts at the Beloyarsk AES and the second power unit with a capacity of 410,000 kilowatts at the Armenian AES.

There will be put in operation large animal-husbandry complexes for growing and fattening of 33,200 head of cattle and 849,000 pigs and poultry factories for 6.9 million bearing hens and 74.2 million poultry for meat.

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The construction of facilities for housing, municipal services and cultural-everyday use and for education and health care is proceeding on a wide scale. This year residential buildings will be constructed with a total floorspace of 112.3 million square meters, as well as children's institutions for 588,000 places, schools for 128,800 pupils and hospitals with 55,300 beds.

In the past years of the five-year plan, all sectors of the construction materials industry, including the glass and ceramic sector underwent further development. Capacities were put in operation for the production of 21.1 million square meters of window glass, 3.93 million glass blocks, 3.65 million square meters of facing tile, 1.5 million square meters of floor tile, 1.67 million square meters of facade tile, 980,000 sanitary-ceramic products. Consumer goods were produced in a sum of approximately 35 million rubles of high-quality ware.

High production technology is being introduced, ensuring rapid growth in the output of architectural-construction and window glass of improved quality. The experience of the Saratov Plant of Industrial Glass has demonstrated that modernization of VVS [exp unknown] systems with the use of the latest achievements of science and technology and organization of production significantly increases the capacity of the enterprises and increases labor productivity.

During the present five-year plan, the production of large-size glass packs [steklopakety] has been started at the Bor Glass Plant imeni M. Gor'kiy and the Saratov and Salavat industrial glass plants at a total capacity of 2 million square meters a year.

The technical reequipment of construction ceramic enterprises is successfully continuing; these plants manufacture various kinds of tile following the introduction of high-production conveyor lines with tower spray dryers and slotted ovens. At the present time more than 170 such lines are in operation at ceramic plants and combines, producing more than 50 percent of the total volume of tile production.

A major contribution to the development of the glass and ceramic industry has been made by the collectives of enterprises and organizations which are the initiators of the All-Union Socialist Competition for Ahead of Schedule Fulfillment of the State Plan for 1979 and Collectives that have been awarded transferable Red Banners of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee for achieving high indicators in 1978. They include the Bor Order of Lenin Glass Plant imeni M. Gor'kiy, the Gomel' Order of Lenin Glass Plant imeni M.V. Lomonosov, the Slavyansk Order of the Labor Red Banner Ceramic Combine, the Dyat'kovo Order of the Labor Red Banner Crystal Plant and the Tbilisi Combine of Construction Materials and the winner of the republic competition in 1978 the Lobnya Plant of Construction Porcelain.

Good work indicators will be used to celebrate Builder's Day by the initiator of socialist competition with the slogan "For the fiftieth anniversary of the First Five Year Plan--10 shock work shifts" the collective of the Dedovo Ceramic Plant, which for three years in a row has held the transferable Red

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Banner of the RSFSR Council of Ministers and the AUCCTU, the collectives of the Leningrad Plant of Ceramic Products, the Bun'kovskiy Order of the Labor Red Banner Plant of Ceramic Products, the Likhoborskiy Plant of Heat Insulation and Finishing Materials and many other collectives.

The high socialist commitments they assumed in 1979 are being successfully fulfilled by the initiators of the competition V.K. Korotkov, a glass-pulling machine operator at the Bor Glass Plant imeni M. Gor'kiy, the brigade of blowers of crystal products at the Dyat'kovo Crystal Plant headed by A.A. Kolodin, floor-tile press operator R.P. Gnilit'skaya at the Slavyansk Ceramic Combine and foundry worker Ye.A. Gagarina at the Bun'kovskiy Ceramic Products Plant and others.

More than 15,000 workers have fulfilled their personal assignments for more than four years of the Tenth Five-Year Plan. Floor-tile press operator N.I. Voskolupova at the Slavyansk Ceramic Combine in 3 years and 6 months has fulfilled two five-year assignments. Collectives at 17 enterprises, more than 6,000 shops, shifts and brigades and 62,000 workers have decided to commemorate the 110th anniversary of the birth of V.I. Lenin with ahead of schedule fulfillment of five-year assignments and plans.

Builders and workers of the construction materials industry now have a fine tradition, on pointing out achieved successes on Builder's Day, to concentrate their attention on unresolved tasks and to outline new further-development targets.

A most important task is that of raising the quality of construction; its solution depends to a large degree on the construction materials industry. No matter how talented the work of an architect might be or how well individual buildings and whole ensembles might look on drawingboards or scale models in terms of expression or harmony, if there is a lack of good-quality and beautiful--particularly beautiful--construction materials and products, the real thing inevitably becomes a distortion of the plan. Furthermore, the needs of construction for finishing materials are being satisfied far from fully both quantitatively and qualitatively.

Production of new efficient materials is growing at an inadequate rate. For several years now collectives at the Khar'kov Tile Plant, Kuchinskiy Ceramics Combine, associations of Minskstroymaterialy, Bun'kovskiy Ceramic Products Plant and the Tselinograd Ceramics Combine have started mass production of large-size different-color facade slabs. Facing with them facades of large-panel houses involuntarily draws attention and cheers one's eyes. But the useful experience of advanced enterprises is being disseminated slowly. Thus, for example, 23 enterprises of construction ceramics of the RSFSR Construction Materials Industry produced in 1978 only 300,000 square meters of large-size facade slabs.

Construction is experiencing a no less acute need for large-size floor ceramic tile. But enterprises of the same ministry are slow in increasing the production volume of such tile as a consequence of which large outlays of labor

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are needed for putting floors down. Enlarging tile to 15X15 and 20X20 cm size would make it possible to double the labor productivity of finishers who lay the tile.

As we know, rug-mosaic glass tile is being widely used for the finishing of large-panel buildings. Facades faced with white baffle slabs look attractive. At the same time, the use of slabs of only one color results in monotony. Glass plants basically put out white slabs, which impoverishes the architectural appearance of our cities and villages. The setting up of mass production of colored glass slabs is an urgent task. At the same time, sizes of slabs should be increased and their form should be varied.

An effective finishing material is to be found in colored safety shaped glass [profil'noye steklo] whose production has been initiated in the country for the first time by Krasnyy May Glass Plant. Lodges [lodzhii] and balconies, shielded with colored shaped glass, have enhanced the appearance of houses built in Moscow, Klin, Lyubertsy and other cities. This glass has received approval, but it too is made in insignificant quantities. Art glass and colored glass blocks of different configuration are produced in small quantities.

Production development of new efficient materials and products for construction constitutes a first-priority task for workers of the glass and ceramic industry. The quality of erected buildings, their architectural expressiveness, soundness and comfortableness largely depend on this. The key to the solution of the problem is to be found in the fastest possible reequipment and modernization of enterprises on the basis of scientific and technological achievements and widespread dissemination of advanced experience and a rise in the level of socialist competition.

A major role in the acceleration of technical progress, increased efficiency and quality of operation of the glass and ceramic industry is played by sectorial scientific-research institutes and planning and design organizations. The realization of a number of their researches and developments has contributed to a significant degree to technical improvement of production and growth of labor productivity.

But still higher demands are being made today on scientists, planners and designers. They must significantly raise the level of work in the creation of essentially new, highly efficient manufacturing processes and equipment, means and systems of automation and in the creation and development of production of progressive products of high quality from glass and ceramics for construction and other sectors of the national economy.

Of tremendous importance to the continued progress of our country on the road to communism is the decree recently adopted by the CPSU Central Committee "On Further Improvement of Ideological and Political Educational Work." In implementing the tasks set forth by this decree, workers of associations, enterprises, scientific-research institutes and planning and design organizations of the glass and ceramic industry must intensify the struggle for the fastest possible introduction of the achievements of science, technology and

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advanced experience, greater responsibility for the entrusted task, economy and a thrifty attitude toward socialist property and against waste, bureaucracy and regionalism.

"The Soviet man," it is stated in the decree, "must clearly realize the social importance of his personal participation in the fulfillment of the national-economic plans, acceleration of scientific-technical progress as a decisive condition of the further strengthening of the might of the Motherland and the victory of communism."

Workers of the glass and ceramic industry will apply all their energies in order to fulfill with honor the targets of the fourth year of the five-year plan and to make a worthy contribution to realization of the grandiose program of social and economic development of our Motherland adopted by the 25th CPSU Congress.

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CONSTRUCTION, CONSTRUCTION MACHINERY AND BUILDING EQUIPMENT

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ON MODERN URBANIZATION AND SUITABLE DIMENSIONS FOR SOVIET CITIES

Leningrad IZVESTIYA VSESOYUZNOGO GEOGRAFICHESKOGO OBSHCHESTVA, TOM III,
VYPUSK 3, May/June 79 pp 227-232

[Article by N. T. Agafonov, S. B. Lavrov, O. P. Litovka¹]

[Text] The problems of urbanization are attracting an ever increasing amount of attention from specialists. Urbanization (especially during the past few years) has been the topic of a large number of articles, topical collections and monographs. Representatives from a number of the sciences are actively involved in the multifaceted complex of issues associated with urbanization. It is only natural, then, that a number of different (and occasionally contradictory) points of view are shaping up and that there is a great deal of discussion on urbanization as a whole as well as on its individual issues. Among the most debated are two questions: 1) that of the essence of the process of urbanization and its role in the system of social and historical processes; and 2), that of "optimum" dimensions for cities.

The complicated and dialectically contradictory process of urbanization provokes not merely interest but even amazement among some groups of Soviet urban specialists: expressions such as "the phenomenon of urbanization" which, according to the meaning of the word "phenomenon," implies nothing that is out of the ordinary or exceptional in this process, have crept into scientific practice. Over the past few years, some urban specialists have literally come to interpret urbanization as a relatively independent social and historical process. This position has been developed most clearly by Yu. L. Pivovarov who views urbanization as a self-generating process from the lower forms of settlement to higher ones while remaining abstract from the nature of property and the sociopolitical structure.

This type of position demands as a minimum the following rebuttals.

¹ The immediate cause for writing this article was the publication of Yu. L. Pivovarov's book [9] which was followed by a review by Ye. D. Mikhaylov. The authors agree with neither the premise of the book nor the review.

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The essence of urbanization is not a transition from some forms of settlement to others (albeit higher), but the development of urban relationships and their spread into the countryside [1]. The development of forms of settlement and the transition from its lower forms to higher ones is important, but it is only one of the types of manifestation of the process of urbanization. Proceeding from this, neither the problems of urbanization as a whole nor the more frequent problems of settlement and the development of a network of populated points can be viewed outside the context of the entire problem structure of the development and distribution of industry as a dialectical unit of production forces and production relationships, but can be viewed separately from the problems of the development and distribution of the production and social infrastructure, the territorial organization of production forces, the regional-systematic organization of society with the necessary allowance made for the peculiarities of the given socioeconomic formation as a whole [12]. This is one of those general scientific truths without which it is difficult to imagine the development of the Soviet economic-geographic and demographic sciences and the practice of Soviet city planning. Equally unacceptable is the removal of the issues of urbanization from the problems of population growth as well as from problems of duplication and the use of labor resources and the work force, which is prominent in certain works on urbanization [4, 5, 8, 9] and others.

In the Yu. L. Pivovarov book cited above, the acknowledgement of these truths is, in our opinion, of a particularly formal nature. As a result, his proofs of the "self-generation" of urbanization spring up. Correspondingly, in examining the problems of urbanization and settlement, the author works on a "global level," totally unconcerned in some cases and only slightly concerned in others with the associations between these issues and forms of property among the resources of production (primarily land) and the level of the development of the productive forces of a society and its technical capabilities. From this type of approach there follows an abstract "pattern of evolution of the forms of settlement: from city to urbanized regions and zones" via an agglomerative process that has been accepted without criticism from foreign literature and is, in fact, derived from the urban-sociological concept of societal development along with other concepts such as the ecological (an ever increasing mastery of nature), the geohorological (an ever increasing development of ecumenism), the resource (resources as the determining factor of a society's development) directed at finding a substitute for the Marxist concept of social development from one mode of production to another, replacement of which determines the pattern for the development of a settlement. It is not by accident that the "scheme of evolution for forms of settlement" totally ignores such types of settlement as rural population points just as it also ignores the issue of the penetration of urban relationships into the countryside (the interaction of urban and rural populations and the problem of urbanizing the countryside, respectively).

The position of "self-generation" in urbanization can be subjected to even more thorough criticism although it appears and has been said enough that to draw conclusions about it is fruitless and erroneous.

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The question of optimum dimensions for cities is being actively debated in domestic as well as in the specialized foreign trade press. To be specific, in the works of some Soviet urban specialists, a great deal of attention has been focused on criticizing the concept of "optimum" cities and attempts to prove the economic and social effectiveness of large cities in comparison with small and moderate-sized towns.

It is first necessary to emphasize that fighting the concept of an "optimum city" is to do battle with phantoms. This concept has been completely debunked in Soviet urban science. It is another matter that a number of Soviet urban specialists (including the authors of this article) feel that in any country, and even more so in a huge nation like the USSR, the existence of cities of various sizes is appropriate. The essence of this position consists of the fact that the sizes of cities depend on the functions of the latter, and accordingly, each type of city has its own best parameters for the size of its population.

The modern level of scientific urbanology does not as yet make it possible to establish a well-founded, integral and orderly theory of urban optimization in the necessary form on the basis of which, direct planning for all aspects of development--economic as well as social--would be possible. However, the practical aspects of social development surely call for such planning or at least regulation of the basic parameters. For this reason, complex economic and social planning which is becoming increasingly popular is also developing on a largely empirical basis (theory is separate from practice).

It is true that, over the past few years, a number of general works have appeared ([¹⁰, ¹²] and others), many premises of which have been directly put into practice, but this is clearly inadequate for purposes of developing an integral theory of urbanization and the development of cities within the USSR as well as for a formalized answer to the question of the most effective dimensions of cities.

While not claiming in the least to be oracles, we will discuss some of the deliberations on this question.

An overwhelming percentage of Soviet cities are presently included in the category of small ones and the developmental trends are such that new small urban settlements will also appear in the future. By the same token, a percentage of small cities is making the transition to the category of moderate size, medium-sized cities are moving to the category of larger cities, and the large cities are becoming even bigger. This is an objective process which cannot be stopped or prevented. However, within the setting of a socialist society, this process can and should be regulated according to a plan.

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We accept as an immutable truth that any regulation of the growth of cities should be, first of all, a result of the criteria for economic and social effectiveness (the inadequate level of theoretical and methodical work on this question cannot change the fact of the position). This means that only economic and social foundations can play a decisive role in determining the best parameters for urban development.

In the very general plan, the issue must be decided thusly: the dimensions and distribution of urban settlements must match the level of development and distribution of socialist production. Because of this, there may be some question concerning the relationships of economic and social criteria.

We conceded that there is no object for discussion here since the discussion is not of the greater or lesser importance of any given criterion, but only about the order of their importance; as soon as the pattern for the economic development of a city has been set, it must be adjusted with allowances made for the objectives and tasks of social development.

Industry is a basic city-planning factor for most cities at the present stage. The level of urbanization of a country or individual regions and the structure of urban settlements are determined primarily by its development. Proponents of unlimited growth for large cities cite the objective advantages of concentrating industrial production [9, 11] as the main economic argument. However, the reference to the concentration of industry is altogether incorrect. The fact of the matter is that all industrial production is objectively divisible into two groups: those that noticeably improve their economic indicators with an increase in concentration and others where concentration has no such effect. ²

Along with the difference in production in regard to the effectiveness of concentration, their differences in terms of the effectiveness of using such forms of industrial organization as specialization, cooperation and combination are quite substantive. Thus, among the total number of industries, item-by-item and technological specialization has a great effect. Its use generally appears to be associated with the establishment of a vast main enterprise and numerous subcontracting enterprises whose sizes are generally somewhat smaller. In the overwhelming majority, these subcontracting firms can be located at considerable distances away from the main plant and from each other. The latter establishes objective grounds for a multiplicity of suitable variants of their distribution.

² For more detail on the question of the effect of concentration and other forms of the social organization of production on the development of cities, see [3].

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- Merging, as a form of industrial organization, is quite effective in metallurgy, the paper-cellulose industry, certain sectors of the chemical industry, and to some extent, the power and ore-extraction industries. On the other hand, many sectors are "indifferent" to mergers. Industries such as the electrical and radio equipment industries, instrument building, the clothing and knitwear industries, where merging has taken place, show almost no economic effect. As a result, for a number of enterprises that are "indifferent" to merging, the multiplicity of distributional variants is amplified.

In conjunction with the above, the issue of the complex distribution of production takes on exceptionally important significance; for some enterprises it seems unquestionably necessary while for others its effect is minor.³

In an examination of industry as a major city-planning factor, it is possible to come to the following conclusions.

Industries in which the effectiveness of concentration and combining is high are characterized by the presence of large and extremely vast enterprises with significant personnel contingents. At the same time, the largest enterprises are also powerful industrial conglomerates which draw other sectors into their own. On one hand, their city-developmental role is reinforced by this while, on the other, the number of suitable variants of distribution is severely limited.

Industries in which the effectiveness of concentration or combination is only slight are characterized by relatively small enterprise dimensions. Many small and moderate size enterprises have only a slight tendency towards agglomeration. For this reason, they have a relative "loose distribution" (multiplicity in the variants of distribution).⁴

Thus, in our opinion, the economic aspect of the problem is not which cities to develop--the large or small ones, but what industry in which cities should be developed.

³ The discussion here is about the complex distribution of enterprises within the confines of an industrial center and not within an industrial region. In a regional complex, each enterprise should be entered in principle although it need not necessarily become a part of any one complex of the center where it is located. Such an enterprise may also be located separately, forming an independent industrial point.

⁴ When the question arises about the distribution of such projects, the discussion should not be on any specific city (point), but rather on the region in different parts of which the economic indicators for a given enterprise are approximately equal. It is first necessary to determine all such points within this region and then finally resolve the question on the distribution of enterprises on the basis of all other, including noneconomic, factors.

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The criticism of extremely large cities contained in the works of many urban specialists is justified to a limited extent. In the nation's largest cities, we are inevitably confronted with a whole series of acute problems that are difficult to resolve. They are a result of disparity between the dimensions of such cities (the amount of space, the size of the population, the scale of industry) and the existing capabilities for organizing and developing an industrial and social infrastructure. This objective contradiction must have a two-fold resolution: improving the infrastructure and limiting the rate of growth for such cities. From this, it is obviously necessary to refrain from locating any enterprises that are strong agglomerative industries within them. At the same time, it is totally necessary to avoid placing such enterprises in larger cities that are characterized by a significant "loose distribution." Explaining precisely what enterprises should be included in one category or another is a matter which is not as complex in practical terms.

If such an explanation is made, organizing the appropriate control can be entrusted to the elements of the USSR Gosstroy. As we imagine in this instance, building only those enterprises in the largest towns that are functionally necessary to the development of any given city can become a reality.

In our opinion, this principle must be applied for even those enterprises that do not have multiple variants of distribution. If the optimum variant presupposes disturbing enterprises within a city whose growth has tended to slow for awhile, in the majority of instances, it is obviously better to skip this variant and choose another. Adherence to this principle must be especially stringent when it comes to enterprises that might become strong, industrial conglomerates.

Thus, the discussion is not about prohibiting industrial construction in large cities altogether but prohibiting or restricting the construction of certain categories of enterprises within them at a certain stage. Later on, when the infrastructure in any city has been shaped to comply with its size, it will be possible to drop any sort of limitations on industrial development; that is, to make use of the economic advantages of a large city.

In discussing the "optimum" dimensions of cities, there are also certain other aspects that merit attention. It is amazing that both the proponents of the "optimum" city and the proponents of large cities are, in practical terms, out of touch with the listing of functional differences among cities and particularly with their economic organizational (regional organizational) role. We know, for example, that an extremely high proportion of the nonindustrial sector in the total population make-up is characteristic for oblast and republic centers. The actual number of workers employed outside of industry in such cities depends primarily on the economic and demographic potential of the respective regions. The specific nature of this relationship needs additional study. In particular, a comparative analysis of materials from the census counts of 1959, 1970 and 1979, which makes it possible to see the characteristic and substantive trends of development,

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is most interesting. There is no doubt that further study of this relationship will help to provide a more objective answer to the question of what the suitable dimensions for cities of various functional types should be.

We will note yet another trend: centers whose regional organizational influence is limited solely by their oblasts are smaller, as a rule, than centers in inter-oblast, and even more so, the large economic regions that are on approximately the same level of industrial development. Census materials from 1970 show that all the latter centers have already surpassed the upper limit of any optimum adopted by city planners. To a large extent, this has occurred as a result of the regional organizational functions of such cities. In this arrangement, the energetic growth of the nation's largest cities is an appropriate result of the development of the national economy and an intensification in the territorial division of labor. Therefore, in the search for suitable urban dimensions, it is necessary to refrain absolutely from any sort of dogmatism in the solutions. We view any extreme point of view as being dogmatic. In the proposal to develop primarily the large cities, there is every bit as much dogmatism as in the search for "optimum" parameters. The best dimensions not only can, but must be different for cities of different functional types. For the largest regional organizational centers, the upper limit of optimum might be quite high.

Efforts to find the optimum dimensions for cities stem from efforts to find a universal means that could be helpful in solving most, if not all the inner-city problems that occur. In this process, these efforts start from the fact that all problems (or a majority of them) must necessarily be solved more successfully than in "non-optimum" conditions. We take yet another position and feel that each type and class of city objectively has its own problems. This concept can be expanded: a specific range of problems should correspond to every stage of city development. As the development of a city progresses, some problems are replaced by others. For this reason, all the efforts to find a means to create "problem-free" cities are doomed to failure. It is even more to the point that nearly every city must resolve its own individual problems occurring as a result of the specific conditions in which it finds itself. The essence of the matter is not to build a city that does not have problems but to resolve its problems (all of them or the most important ones) in a timely and orderly manner. It is also essential not to create "unnecessary" problems resulting from practical errors in cities.

Without pretending to have an unequivocal solution to the issues noted or even a complete and exhaustive statement of them, we would like to note that, given the importance of a comprehensive approach to these problems, the decisive group of factors is now the economic. Therefore, it is with primary regard to these factors that it is worth prolonging the debate and to establish the creation of a comprehensive theory of city development on this basis.

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METALLURGY

FERROUS METALLURGY FOR 1981-1985 DISCUSSED

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[Article by S. V. Gubert, Director of the State All-Union Institute for the Planning of Metallurgical Plants, member of the Presidium of the Central Board of the Scientific and Technical Society of Ferrous Metallurgy: "The Basic Directions of the Development of Ferrous Metallurgy for 1981-1985"]

[Text] During the coming five-year period (1981-1985) in addition to a further increase in the production of ferrous metals, a great deal of attention will be devoted in our country to solving the problem of an essential improvement of the quality of metal output, to an expansion of assortment, an improvement of the entire complex of consumer properties of the branch's output, and to an increase in the strength characteristics of metal output and in the efficiency of the use of metal in the economy.

The 4th Plenum of the Central Board of the Scientific and Technical Society of Ferrous Metallurgy which took place in Moscow in May of this year was devoted to participation in the solution of these problems.

There was an extensive exchange of opinions at the Plenum about existing reserves for production and for improving the quality of output and about the ways of realizing them.

At the present time the development of the country's ferrous metallurgy is characterized by high production growth rates, a continuous expansion of assortment, and outstripping growth in the production of progressive types of rolled goods, piping, and hardware. This outstripping growth will be the basic direction in increasing the efficiency of the use of metal in the economy in the future also.

Thus, it is planned to increase the proportion of sheet in the total production of rolled goods to 45 percent. The production of a number of new types of output (whose production was begun during the current five-year plan) will increase: Bethlehem beams, sheet with polymer coatings, steel-aluminum wire, and others.

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There will be a substantial increase in the proportion of steel which is worked in a vacuum, by inert gases, and by synthetic slags.

In order to satisfy the increased demands of consumers it is planned to achieve the industrial mastery of the production of rolled goods with chrome, aluminum, and other metallic coatings, of galvanized rolled sheet with subsequent polymer coatings, of electrolytic galvanized sheet, of the finest sheet iron with tin-free platings, and of high-grade rolled goods made of steel smelted with metallized pellets and with a guarantee of high mechanical properties and high quality surface finish; of thermo-mechanically machined high-strength sheet and other types of rolled goods; large-diameter welded pipes for northern use designed for a pressure of 10 MT (100 at), and new types of cold-deformed pipes for thermal and atomic electric power; and high-strength wire for ferroconcrete structures, including stabilized and galvanized wire, brass-plated wire, aluminum- and polymer-plated wire, metal cord of an improved design, and other hardware.

The economy's growing need for metal output will be met to a substantial extent through a further improvement of the quality and an expansion of the assortment of ferrous metals. An improvement of the consumer properties of metal yields an economy of around 50 percent of the total physical increase in the production of finished rolled goods. The level of the use of metal in the economy will increase as a result of an expansion of assortment, an improvement of the quality of ferrous metals, and an improvement of metal working.

In rolling production it is planned to achieve the industrial introduction of production processes for the production of cold-rolled transformer steel with low specific losses and for obtaining cold-rolled dynamo steel; for the production of bent sections made of high-strength steels--welded, closed, and with various types of platings; for the sorbitization of rod wire; and for the production of high-grade rolled goods and Bethlehem beams of continuous-cast billets. We will master the thermo-mechanical machining of high-grade rolled goods, the production of a wide assortment of metal output with various types of platings, including differentiated and unilateral, the production of steel sheets with a tin-free plating (chrome and aluminum), and the production of sheet metal with zinc-aluminum and steel-zinc platings. Approximately 500 hot-rolled and cold-rolled sections and 200 to 300 new steels and alloys will be mastered during each five-year plan.

In order to accomplish this task it is planned during the next five-year plan to build several plate mills and a narrow-strip cold rolling mill in order to supply rolled stock to cold rolling shops. It is planned to build a number of rolling mills for alloy metal.

During the period being considered it is planned in pipe production to master production processes for the production of multi-layer and two-layer large-diameter pipes and others; it is planned to increase the production

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of pipes of all types and, above all, for the petroleum and gas extracting industry with a simultaneous shift to new types of thread joints, to produce drilling pipes with welded locks, and to increase the proportion of high-strength pipes in the total production of driving, drilling, and compressor-pump pipes.

In hardware production it is planned to introduce a process for plating wire with aluminum and polymers, the production of high-strength fitting wire and grids with anti-corrosion plating and of rope subjected to plastic draft, electro-contact heating with liquid contacts, thermo-mechanical hardening, and the electro-chemical purification of welding wire.

It is planned to substantially improve the structure of the assortment of hardware on the basis of an outstripping growth in the production of highly effective types of hardware: metal cord, powder wire, cold-rolled strips and shaped sections, hardware made of alloy and high-carbon steels, thermally treated steels, plated steels, and others.

The increase in the production of hardware during the new five-year plan will be ensured by the construction of specialized hardware shops at hardware and metallurgical plants.

In the field of steel smelting production the use of new production processes is scheduled for the period being planned--electrosmelting involving the use of metallized continuous-loaded pellets. Converter smelting with bottom blowing, the production of electrotechnical steel in converters, argon-oxygen refining of non-rusting steel, the continuous vacuuming of steel on MNLZ [expansion unknown], the casting of a wide assortment of billets on horizontal-type MNLZ, and others.

It is planned to further improve the structure of steel-making conversions --to increase the proportion of converter and electrosteel-smelting production. In addition, it is planned to substantially decrease the absolute amount of marten steel smelting by means of decommissioning a number of obsolete shops (especially those with furnaces which operate on the basis of hard charging). Scrap metal resources will increase; the use of metallized raw materials on an industrial scale will increase.

The planned increase in the production of iron is to be ensured by the commissioning of a large blast furnace and the reconstruction of operating furnaces at a number of plants.

In accordance with the development of basic metallurgical production it is planned to re-equip and develop the ferroalloy, refractory, scrap processing, coke-chemical, and ore mining branches of ferrous metallurgy.

It is planned to introduce new production processes--for the enrichment of oxidized iron ores, the cyclic-flow line and flow line mining of rock or masses, the dry magnetic separation of ore, and others.

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During the future five-year plan a large amount of attention will be devoted to carrying out a program of environmental protection and improvement and also to the rational use of all types of natural resources. In order to ensure the cleanliness of the air it is planned to carry out a complex of work to create protected zones, to install equipment which produces a minimum of discharges into the atmosphere, and others.

A number of measures have been planned for the protection of bodies of water against pollution, including by means of the construction of installations for the utilization of hard and liquid production waste. There will be a substantial increase in the proportion of water circulation systems; at new facilities it is planned to have only such systems without the discharge of polluted sewage waters.

In order to increase the efficiency of the development of the branch and to make rational use of material resources measures are being planned to reduce the materials intensiveness of metallurgical production. The expenditure of coke per ton of iron will decrease; thanks to a further development of continuous steel smelting and the use of heat insulation and exothermic inserts and other factors the expenditure of steel per ton of finished rolled goods will decrease. Higher renewal rates for fixed capital are essential in order to further decrease the materials intensiveness of metallurgical production; additional capital investments have been allocated for these purposes.

During the next five-year plan an important place will be assigned to accomplishing the tasks of decreasing expenditures of fuel and electric energy and of making efficient use of fuel and energy and material resources. The share of ferrous metallurgy in the country's fuel and energy balance will decrease: this is being ensured by an outstripping development of the fuel and energy complex in the economy and by the influence of technological progress in ferrous metallurgy on decreasing energy expenditures.

A great deal of attention will be devoted to the problem of decreasing the number of workers and increasing labor productivity.

The decommissioning of obsolete shops and equipment, the introduction of new equipment, an improvement of existing production technology, production concentration, and increase in the unit capacity of equipment, the mechanization of labor consuming operations and production automation will make it possible to decrease the number of workers of the branch and use them in other jobs and at new facilities and to increase labor productivity.

An outstripping development of ferrous metallurgy is planned for Siberia and the Far East.

The realization of the development plan for ferrous metallurgy for the years 1981-1985 will make it possible to substantially raise the technical level of the branch and the economic efficiency of the production of ferrous

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metals and to basically accomplish the socio-economic tasks which have been set for metallurgical workers in the decisions of the party and government.

A Plenum of the Central Board of the Scientific and Technical Society of Ferrous Metallurgy has adopted a decree in which it has bound republic, oblast, and territorial boards, the councils of the primary organizations of the Scientific and Technical Society, and branch sections:

To concentrate the efforts of engineers and technicians on solving the chief problems of technological progress in the branch;

to bring about a wider enlistment of the engineering and technical and scientific workers of plants, scientific research institutes, and planning institutes in the development of long-term plans for the development of enterprises;

to make recommendations and proposals on the re-equipping of shops in order to substantially increase technical and economic indicators.

The councils of the primary organizations of the Scientific and Technical Society of the USSR Ministry of Ferrous Metallurgy have been ordered to enlist engineering and technical workers for the punctual fulfillment of higher quality planning work.

It has been recommended that the editorial boards of the scientific and technical periodicals STAL', GORNYI ZHURNAL, KOKS I KHIMIYA, and OGNEUPORY and the "Chermetinformatsiya" ensure the extensive treatment of materials on the basic directions of technological progress in the branch.

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